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ABSTRACT

This book presents an overview of Americans' eating habits in the present and the early 1900's. Chapter One discusses factors contributing to the nation's dramatic, almost unprecedented dietary changes and provides a brief discussion of food consumption statistics. Chapter Two compares present and past U.S. consumption of alcoholic beverages, beans, peas and nuts, candy, coffee, tea and cocoa, eggs, fats and oils, fish and shellfish, flour and cereal products, food colorings, frozen foods, fruit, ice cream, ice milk and other frozen dairy products, meat, melons, milk and cheese, potatoes, poultry, soft drinks, sweeteners, and vegetables. Chapter Three explores nutritional implications of the changed American diet. Calories, fat, carbohydrate, protein, and seven vitamins and four minerals are discussed. A table of approximate daily food consumption, a list of fast food facts and figures and The Changing American Diet Quiz are appended. This book is published by the Center for Science in the Public Interest (CSPI), a non-profit group dedicated to helping solve some of the nation's serious nutrition problems. (Author/RH)

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The Changing American Diet

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CHAPTER 1

Our Changing Food Habits

The American Diet in Flux

"People's food habits change very slowly," say most anthropologists. Yet, if our great-grandparents spent a day eating with us, they would be wide-eyed and shocked. And if they were plopped down in a modern supermarket, they would probably not know for sure whether they were in a toy, hardware, or grocery store.

The New American Diet is very different from the traditional diet common at the beginning of this century. In some ways it is better, in some ways worse.

The New American Diet, for example, includes such traditional foods as milk, honey, and broccoli. But it also includes enormous quantities of soft drinks, frozen French fries, and other food products of the industrial age.

Many factors have contributed to our nation's dramatic, almost unprecedented dietary changes. They include:

- **New technologies.** Technological "advances" such as freezing, dehydration, and food additives have made it possible to produce frozen orange juice, dried soup mixes, and imitation eggs at prices consumers can afford.
- **Affluence.** As our nation became more affluent, people switched from bread and potatoes to meat, chicken, and sweets.
- **Government programs.** Federal food programs made more food available to more people. Over seven billion dollars a year worth of food stamps, subsidized school lunches and breakfasts, and other programs are enabling low income families to eat more food than they were able to 30 years ago.
- **Working parents.** In more and more families, both husband and wife have jobs. Parents who work are less likely to prepare a bacon and egg breakfast and more likely to serve a dinner made from packaged convenience foods than their non-working counterparts.
- **The end of the baby boom.** Foods that are more popular among children than adults (such as baby foods, candy, and milk) are beginning to show declines in consumption or slower increases now that the

average age of Americans is increasing. On the other hand, the consumption of "adult" foods (such as alcoholic beverages, shellfish, and broccoli) is picking up.

• **Health concerns.** About one-fourth of the 1400 respondents to a 1976 United States Department of Agriculture (USDA) survey said that someone in their household had changed his or her diet as a result of a health problem (overweight, high blood pressure, etc.). Another quarter of the respondents said that someone in their household was now choosing different foods and beverages to prevent such health problems.

This nation's mammoth food industry plays a major role in influencing food habits. Manufacturers cater to (some would say "take advantage of") the public's desire for a particular taste or for convenience. After all, there's a lot at stake: the American appetite is worth over $200 billion a year.

Not surprisingly, the industry chooses to market most aggressively those foods that are most profitable. The food industry spends about $6 billion a year, or three percent of our food bill, on advertising and other forms of promotion to encourage us to buy certain products. In addition, we pay about $26 billion, or 13 percent of our total food bill, on packaging—often just another form of advertising.

Not all foods are promoted equally. Nobody sponsors full-page magazine ads for breast milk or homemade soup, but there are plenty of such ads for infant formula and canned soups. Sugary breakfast cereals ("breakfast candies"), candy bars, and snack cakes comprise the great bulk of advertising on children's TV shows. But you'll find few ads for potatoes or whole wheat bread on those same shows.

In general, "differentiated" foods—those that are unique and can be sold by brand name—bring higher returns to manufacturers than do basic commodities, which are highly competitive. The higher profits permit more extensive ad budgets . . . and the ads certainly influence buying decisions.

Retailers also guide our food choices. The placement of food in supermarkets exercises a subtle influence on our buying decisions. The "end of aisle" displays are prime sales areas, and candy and other "children's" foods are often placed at the child's eye level.

The places where we purchase our food has also been changing. One hundred years ago, many people lived on farms and had gardens. Most food was fresh and locally grown. Now, only a few million people live on farms and only a fraction of the population has extensive gardens.

Of course, vending machines were rare a hundred years ago. Now, about five percent of our food dollar—$10 billion a year—is spent at

these machines, where a few coins will bring us a candy bar, cup of coffee, or can of soup.

But the big growth industry as far as food is concerned has been restaurants. Greater affluence, more vacations, and more people holding down jobs has resulted in our spending one out of three food dollars away from home, mostly in restaurants. This figure is expected to rise to one-half of our food dollar by 1990.

Fast food restaurants gobble up much of that money. They have been a major influence on our changing food habits. The limited choices that are available in a typical fast food restaurant have encouraged a trend toward a diet composed of relatively few different foods. The rise in potato consumption during the last 15 years has been due almost entirely to the purchase of French fries at franchised restaurants. Catsup, pickles, beef, chicken, fish, and ice milk (used in fast food shakes and cones) have also shown dramatic increases.

This narrowing of our eating habits has brought some companies big profits. The largest fast food chain, McDonald's, grew almost thirty-fold from sales of $129,600,000 in 1964 to sales of $3,738,000,000 in 1977. During 1977 alone, McDonald's spent over $120 million on advertising.

In most cases, food marketers seek to influence our decision, but some, at least, give us a choice. You can still get fresh vegetables, fresh fruit, and fresh eggs in supermarkets. Sometimes, however, we are deprived of that freedom of choice: try to get your hamburger on a whole wheat bun at a fast food restaurant . . . try to talk that vending machine into giving you a can of tomato juice instead of a can of soda pop . . . ask for an apple at a refreshment stand in a national park or football stadium.

Some of the changes in food consumption have been remarkably great. Other changes are surprisingly slight. Table 1 and 2 highlight some of the more interesting changes in food and nutrient consumption that have occurred during this century.

From a nutritional point of view, the most significant changes in the American diet in the last 65 years have been:

- *the increase in fat consumption.* Fat provided 42 percent of our calories in 1976, *31 percent more* than the 32 percent of our calories that fat supplied in 1910.
- *the decrease in complex carbohydrates (basically starch) consumption.* Complex carbohydrates accounted for only 21 percent of our calories in 1976, *43 percent less* than the 37 percent of calories that complex carbohydrates provided in 1909-13.
- *the increase in sweetener consumption.* Refined sugar, corn syrup and other caloric sweeteners supplied 18 percent of our calories in

1976, a full *50 percent more* than the 12 percent of calories that sweeteners furnished our grandparents in 1910.

These changes would be of only academic interest if they were not linked to important changes in the public's health. But our "new" diet, in combination with our sedentary lifestyle, has contributed to what must be considered a national epidemic of obesity, diabetes, heart disease, stroke, and tooth decay. (Smoking, of course, has also contributed enormously to heart disease, as well as lung cancer.) These health problems cost Americans tens of billions of dollars a year in direct medical expenses and indirect losses to the economy.

Table 1 Changes in Food Consumption

Food		Change in consumption (per person)*
Apples, fresh	1910-76	– 70%
Beef	1910-76	+ 72%
	1950-76	+ 90%
Butter	1910-76	– 76%
Cabbage, fresh	1920-76	– 65%
Candy	1968-76	– 18%
Chicken	1910-76	+ 179%
Coffee	1910-76	+ 22%
	1946-76	– 44%
Corn Syrup	1960-76	+ 224%
Fish, fresh and frozen	1960-76	+ 42%
Food Colors (certified dyes)	1940-77	+ 995%
Fruit, fresh	1910-76	– 33%
Grapefruit, fresh	1910-76	+ 800%
Margarine	1910-76	+ 681%
Potatoes, fresh	1910-76	– 74%
Potatoes, frozen	1960-76	+ 465%
Soft Drinks	1960-76	+ 157%
Sugar and other caloric sweeteners	1909-76	+ 33%
Tuna, canned	1926-76	+ 1,300%
Turkey	1910-76	+ 820%
Vegetables, frozen	1960-76	+ 44%
Wheat flour (including flour used in bread, spaghetti, etc.)	1910-76	– 48%

*Refer to sections in chapters 2 and 3 on individual foods and nutrients to see the absolute numbers behind these percentages.

Table 2 Changes in Nutrient Consumption

Nutrients		Change in consumption per person*
Calories	1910-76	− 3%
Fat	1910-76	+28%
Carbohydrates	1910-76	−21%
Protein	1910-76	+ 1%
Dietary fat from separated fats and oils (butter, margarine, oil, etc.)	1921-76	+56%
Grams of carbohydrates from sugars	1909-13—1976	+31%
Grams of carbohydrates from starches	1909-13—1976	−45%

*Refer to sections in chapters 2 and 3 on individual foods and nutrients to see the absolute numbers behind these percentages.

In January 1977, the Senate Select Committee on Nutrition and Human Needs (now a subcommittee of the Senate Agriculture Committee) published a study that recapped dietary changes and recommended specific dietary goals. The report noted that six of the 10 leading causes of death in the United States are linked to diet (heart attack, stroke, arteriosclerosis, cancer, cirrhosis of the liver, and diabetes). These causes account for about half of all deaths. As a result of its study, the Committee called for seven specific changes in the current American diet (the *Dietary Goals for the United States* were updated in January, 1978; the revised goals are listed here):

1. Increase the consumption of complex carbohydrates and naturally occurring sugars from about 28 percent of energy (caloric) intake to 48 percent.
2. Reduce overall fat consumption from approximately 40 to 30 percent of energy intake.
3. Reduce saturated fat consumption to account for about 10 percent of total energy intake; and balance that with poly-unsaturated and mono-unsaturated fats, which should account for about 10 percent of energy intake each.

4. Reduce cholesterol consumption to about 300 milligrams a day.

5. Reduce the consumption of refined sugars by about 45 percent to account for about 10 percent of total energy intake.

6. Reduce salt consumption by about 15 to 70 percent to approximately five grams a day.

7. To avoid overweight, consume only as much energy (calories) as is expended; if overweight, decrease energy intake and increase energy expenditure.

Dr. Robert Angelotti, administrator of the Department of Agriculture's Food Safety and Quality Service, seemed to agree with the Senate Committee when he said in 1977 that, "It is generally accepted within the medical and nutrition professions that some of our nation's most prevalent health problems are diet related." He went on to promise that his agency would "initiate programs that are directed toward educating consumers about the problems associated with excessive intakes of sugar, sodium, and fat. In addition, we shall seek and implement programs to reduce the content of these substances in the foods we regulate and purchase."

Clearly, scientists and government officials are beginning to agree not only that dietary changes would be beneficial, but also on the direction of those changes. Now they must act.

The massive power of the food industry to direct eating habits, the relative powerlessness of the consumer, and the catastrophic health consequences of the New American Diet indicate the need for a comprehensive federal program to change the American diet. In most cases, federal actions should aim to provide people with more choices and more information than they now have. Measures that the federal and local governments should consider include:

- TV and radio campaigns encouraging people to eat more nutritious foods and less non-nutritious foods. "Nutritious" foods would include vegetables, poultry, low-fat dairy foods, dried beans, fruit, fish, very lean meat, and whole grains. "Non-nutritious foods" would include those that are excessively high in salt, sugar, fat, and cholesterol.
- Changes in the meat-grading system so that the fattiest beef is no longer considered "prime" and so hot dogs, bacon, and other processed meats are graded according to fat content.
- Requirements that nutritious foods be offered in at least half the slots of vending machines at any given location.
- Requirements that fast food restaurants have drinking fountains and free cups.
- Provisions for more nutritious meals in military and other government cafeterias.

- The banning of commercials for sugary and fatty foods on children's television shows.
- Requirements that the fat, sugar, and salt contents of processed foods be prominently disclosed.

Adoption of any of these programs would result in economic losses to certain segments of the food economy and gains to others. This implies that some interests would resist vigorously the adoption of programs designed to improve eating patterns and health.

Advocates of a changed diet and a healthier public will obviously have to work just as hard to promote their programs. To maximize the chances of success, nutritionists, consumer groups, parents, health professionals, labor unions, students, church organizations, and certain segments of industry will have to work together for change.

They can take these statistics as a measure of the challenge before them.

Food Consumption Statistics, What They Really Mean

Food consumption statistics . . . they seem like hard data, they lend authority and an aura of precision to what one says. But to make the best use of any of these numbers, it is vital to realize just what they measure, how they were derived, and what their limitations are.

The nationwide food supply data used in this book offer the most comprehensive overview of the state of the American diet. Using these careful calculations we can most effectively monitor changes in the American diet over time.

Most of the graphs and statistics in this book are based on the United States Department of Agriculture's (USDA) detailed reports on the food supply, *Food Consumption, Prices and Expenditures,* published every year by USDA's Economics, Statistics and Cooperatives Service. USDA furnished additional information through interviews and through the National Food Review (formerly National Food Situation) which it publishes four times a year. We have translated some of USDA's technical data and jargon into more easily understandable terms: doing things like converting milk consumption data from the USDA's pounds (who goes to the store to pick up a pound of milk or cream?) into gallons, explaining briefly that the "edible offals" Americans are eating at a rate of 10 pounds a year per person are mostly organ meats, and converting tables into graphs. But we are indebted to the work of tireless USDA economists who compiled the figures in the first place.

Other sources provided a few of the figures. The Food and Drug Administration supplied the figures on the amount of food colors certified per year. The Department of Commerce supplied candy consumption statistics in its *50th Annual Survey of Confectionery Manufacturers' Sales & Distribution 1976.* Some statistics came from industry trade associations (soft drink consumption from the *National Soft Drink Association 1976 Sales Survey of the Soft Drink Industry*) or from trade publications (ice cream flavor mix from *Dairy and Ice Cream Field*; frozen food consumption from *Quick Frozen Foods*) while independent researchers supplied a few other statistics (alcohol consumption from the *Journal of Studies on Alcohol*).

The most important caveat regarding USDA statistics on food "consumption" is that the statistics actually measure "disappearance" of food into the market, not into the stomach. If all the food sold were eaten, the numbers would be accurate measures of the food we eat, but, because some food spoils at the store, some spoils in the refrigerator, and some is left on the plate or fed to pets, these figures exaggerate actual intake of food by roughly 25 to 30 percent.

To obtain statistics on the amount of food Americans consume, USDA first determines the quantity of food produced in a given year. Generally USDA gets this data early in the marketing process—before the final product is made. Therefore, we have statistics on flour use (based on surveys of the mills, grain elevators, and processors) and on egg use (based on farm reports), but we have no information on the amount of bread Americans eat. USDA often supplements its survey data with information supplied by each state's crop reporting board and by census production reports from the Department of Commerce. USDA usually uses several channels to obtain information to make what must in the end be a well-educated guess at the amount of any food produced in a given year.

Once USDA determines a production figure, it adjusts it to come up with a figure for consumption. First, USDA analysts add the quantity of stocks which were already present and ready to be consumed on the first of the year; then, they deduct the stocks that were left over and not yet used on the last day of the year. Second, they add all the food we imported and deduct all the food that we exported. This gives a measure of the supply of food available to Americans in a given year. From this, USDA must deduct all non-food use—grain that was actually used as feed for livestock, or oils used for industrial purposes, for example. What remains is the primary weight of the food supply.

To get the figure for the amount of food available at the retail—grocery store—level, statisticians reduce the primary product weight of some products slightly to account for some waste between farm and

store. Fresh vegetables and fruit are reduced by a few percent from farm weight to retail weight to account for spoilage on the way to market. Meats are reduced even more because the primary weights in this case are carcass weights which must be converted to the trimmed retail-cut equivalents which we buy at the store. But for products in packaged form, like fats and oils (butter, lard, margarine and shortening) and dairy products, no allowance is made for waste.

When fruits and vegetables are processed, their retail weight is often a small proportion of the weight of the fruit or vegetable as it left the farm. Because of this, USDA also calculates "fresh equivalent weights" from the retail weight of the processed product. USDA determines, for instance, how many oranges go into a can of frozen orange juice concentrate.

By using these figures, we can compare the number of oranges we consume today with the number our parents ate thirty years ago. In 1930, our parents might have squeezed a half pound of fresh oranges into a glass of orange juice. Today, on the other hand, we may use a single ounce of frozen concentrate for our glassful. By using fresh equivalent weights, we use the same standard our parents did.

In the graphs of fruit and vegetable consumption, therefore, we used fresh equivalents of the processed weights. In the graph of potato consumption, likewise, we used the farm weight of potatoes whether processed or used fresh so that our figures reflect the total quantity of potatoes used over the years, rather than the shrinking weight of the final product as techniques for dehydration were improved.

Except for the fresh equivalent figures used for fruit, vegetable and potato consumption, however, the statistics assume that we consumed all the food that arrives on the market at retail weight. This leads to another problem: we obviously do not eat all the food that is marketed. No allowance is made for any of the waste that inevitably occurs in stores and at home. According to these statistics, Americans consumed every bit of food that goes to retailers.

To calculate how much the "average" American eats, USDA divides total U.S. "consumption" by the July 1 United States population of that year. Before 1941, total United States food consumption was divided by the total United States population. As of 1941, however, military use of food was deducted from the food supply along with exports. The reduced figure was divided by just the civilian population as of that date. This shift helps explain changes like the sudden drop in canned fish consumption during World War II, when tins of fish were taken out of the civilian food supply and sent off to the troops. The shift also helps account for a few unusually high 1945 per person consumption figures. The 1945 civilian population figure (de-

termined July 1) was still reduced, but consumption rose above wartime levels as the military came home during the second half of that year.

The per person consumption figures generated by these calculations are national averages. All of the food in the market is obviously not shared equally by the entire population. Average soft drink consumption was 493 eight-ounce servings in 1976, but some people never touched a drop, while others guzzled much more than that. The national figures we use obscure individual differences. They mask enormous differences between ethnic groups, between adults and children, between farmers and city dwellers, and between affluent Americans dining on steak and asparagus and poor people subsisting on rice and beans. Moreover, the statistics are not adjusted for the facts that the average age of the American population is rising and the size of the average household is shrinking (adults eat more than children and smaller households use more food per person than larger households). Food consumption surveys that categorize subjects by age or income level are better equipped to reveal some of these distinctions, but unfortunately these survey data also have shortcomings and are not available for the first half of the century.

The statistics on food consumption also fail to show some qualitative changes in our eating patterns. USDA generally indicates whether foods are fresh, canned, frozen, or dried. But there have been more subtle changes in the kinds of foods we eat. Potatoes and green beans may be purchased at a farm stand and cooked at home. Or the same foods may be grown on another continent, cooked in a factory, frozen, stored for several weeks, and then shipped thousands of miles to a supermarket. Same foodstuffs, but what a difference!

Moreover, some consumption statistics are simply not available:

- USDA publishes no data on the amount of whole wheat (as opposed to refined white) flour we use.
- There are no decent figures on the amount of salt we consume. Because excessively high salt consumption may lead to high blood pressure, it would be particularly valuable to be able to know how salt intake has varied over the years.
- USDA has stopped estimating the amount of commercial baby food we eat. (USDA uses 1968 figures for baby foods in determining the current nutritional composition of the American diet.)
- USDA has stopped publishing estimates of the amount of home-produced vegetables, potatoes, and melons Americans eat. This makes comparisons across time particularly difficult since previous generations grew much more of their own food than we do today. Moreover, the 1963 estimates that USDA still uses to compute the nu-

tritional content of the present American diet seem extraordinarily high, as they assume that the average American still eats 50 pounds of home grown vegetables per year.

- As of 1975, USDA stopped reporting whether the "other edible fats and oils" were used in potato chips or salad dressings and mayonnaise, or frozen French fries, or mellorine, as they did previously.
- The USDA excludes alcohol consumption from its food consumption statistics. The grains going into liquor production are omitted from the food supply data. The calories that liquor provides, in turn, are ignored in USDA's calorie intake statistics. (We have included alcohol consumption statistics furnished by the Journal of Studies on Alcohol. In addition, we calculated the number of additional calories that liquor supplies to the average American diet and included them in the discussion of calorie consumption.)

Finally, none of the statistics we do have are absolutely exact measures. Some of the earlier USDA data are even termed "approximations" or "estimates." It is only reasonable to expect some errors in the calculations and in the recording along the way. And USDA has its share. Nevertheless, these figures are the most careful calculations available.

Though some of the absolute numbers may exaggerate consumption, they are internally consistent. The statistics are computed the same way every year. Therefore the figures are accurate reflections of the changes in food consumption between specific years. We may, for example, eat substantially less vegetable oil than the absolute figures imply, because a great deal of vegetable oil is used to fry food and is then discarded and not eaten. But the fact that we consumed 91 percent more "edible fats and oils" (mostly cooking and salad oils) in 1976 than in 1960 reflects the fact that we must be eating much more now than earlier. There is no reason to believe that we wasted significantly more food in 1976 than in 1960. The absolute numbers may be somewhat off the mark, but the relative changes reflect actual changes in people's diets. Moreover, it is the changes and not the absolute levels of intake that are significant. If an increasing intake of fat has contributed to a rise in the heart attack rate in America, then we need to reduce our fat intake, whatever the exact level is currently.

The statistics in this book quantify changes in the American diet. They highlight trends in our diets as precisely as possible. Though they are no perfect picture of what the entire nation eats, they are the best figures available to document how the new American diet differs from the American diet of our parents or of our grandparents.

Chapter 2

Foods in Our Diet

Alcoholic Beverages

Since Prohibition, Americans have been drinking more and more alcohol, although nowhere near the amounts that were guzzled during the early 1800's (but keep in mind that early liquor statistics were only approximate).

During the 1800's, sailors, as well as workgangs who were building canals and railways, often received liquor for their wages. Even children were encouraged to drink cider (10 per cent alcohol), because it was safer than the water in many towns.

Cider consumption (virtually all of the beer and cider category until 1840) dropped off suddenly after 1830, primarily as a result of the Temperance Movement. When the wave of German immigrants arrived in the 1840's, however, beer production and consumption climbed rapidly.

Because liquor was outlawed during the Prohibition years of 1920-33, there are no sales records for that period. Nonetheless, estimates indicate that while production was forced "underground," consumption may not have been substantially reduced.

Since Prohibition, alcohol consumption has increased steadily. The 1975 figure for total absolute alcohol consumption, 2.69 gallons per person, (note however, that per person consumption statistics are particularly misleading when it comes to alcohol because a good portion of the population drinks virtually no alcoholic beverages at all, while others drink more than their share) is 24.5 percent higher than the 1961-65 figure (2.16 gallons per person). (Drinking statistics were based on a drinking age population of 15 year-olds and over until 1973; as of 1973, the drinking age population was adjusted to include 14 year-olds and over.)

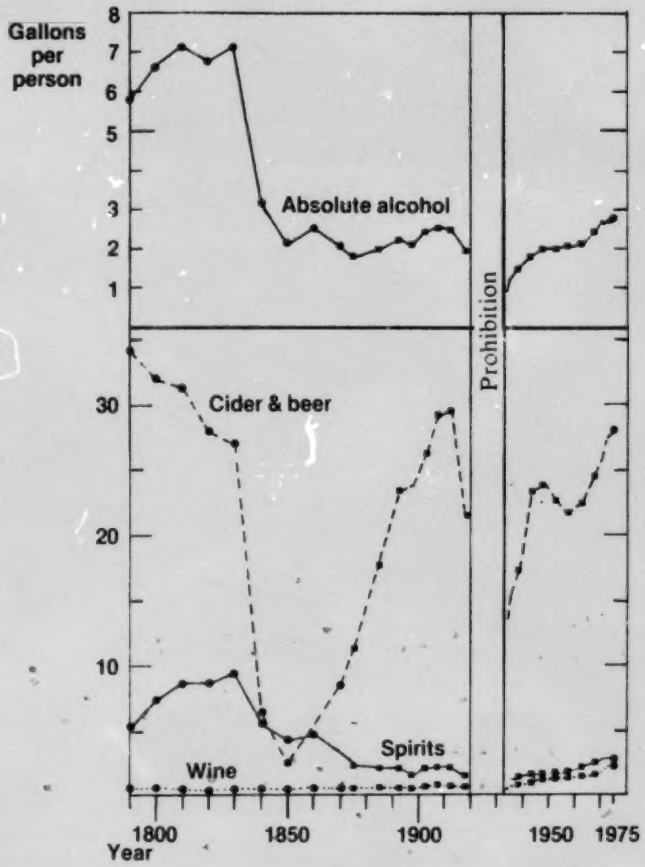
Modern Americans may be drinking less than their ancestors, but because of the automobile, alcohol is killing more people than ever. According to the Department of Transportation, fully 50 percent of traffic fatalities (over 22,000 of the traffic deaths in 1975) involve a drinking driver.

Alcohol also leads to cirrhosis of the liver—the ninth leading cause of death in the United States—and was blamed for at least 40 percent

of the more than 30,000 deaths that resulted from this disease in 1975.

Alcohol can cause birth defects as well. So much evidence has linked alcohol consumption to birth defects that in 1977 the Food and Drug Administration began advocating a formal caution on liquor labels to warn pregnant women that they should restrict their alcohol intake to a maximum of two drinks a day.

Fig. 1. Alcohol Consumption



• = consumption in that year

■ = represents a consumption figure which is an average of 4, 5, 6 or 10 years

Nutritionally, alcoholic beverages are quite indefensible. They give us lots of calories but add few nutrients to our diet. In 1975, in fact, alcoholic beverages (about nine/tenths of an ounce of distilled spirits, eight/tenths of an ounce of wine and 9.8 ounces of beer per day per person of drinking age) added 210 calories a day to the average American's diet. Because tens of millions of people drink little or no alcoholic beverages, such drinks contribute many more than 210 calories to the average drinker's intake.

Beans, Peas, & Nuts

We are eating just as many dry beans today as people did almost 70 years ago—6.5 pounds per person (lbs/person) in both 1910 and 1976. (The dry bean category includes canned baked beans, etc., but does *not* include the beans we grow in our own gardens.)

We apparently eat more beans when we eat less meat. Use of beans, for example, peaked in 1930 when red meat consumption was slumping. Then, in 1950, dry bean consumption picked up again as meat consumption dropped off.

On the other hand, bean consumption took a plunge during the 1960's, a decade during which our meat consumption rose steadily.

Finally, when meat prices rose in the early 1970's and we began turning to less expensive sources of protein, beans once again were in demand.

Dry peas, however, are much less popular than beans. Since 1928, we have annually eaten less than a pound of dry peas per person. (The first adequate statistics for pea consumption became available in 1928.)

Both the bean and pea consumption figures include only those products which were marketed. Because only very rough approximations are available for home grown produce, those figures are not included on the graph.

If the estimates for home grown produce are accurate, however, consumption of home grown dry peas and beans fell from a full six pounds per person in 1910 to 0.1 lbs/person in 1962.

This would mean that total dry bean and pea consumption has fallen from over 13 lbs/person in 1910 to just below 7 lbs/person in 1976.

Like beans, peanuts peaked in popularity during the meat-rationed years of World War II (6.6 pounds of shelled nuts per person). Their popularity then plunged dramatically after the war, although since 1955 it has been increasing steadily.

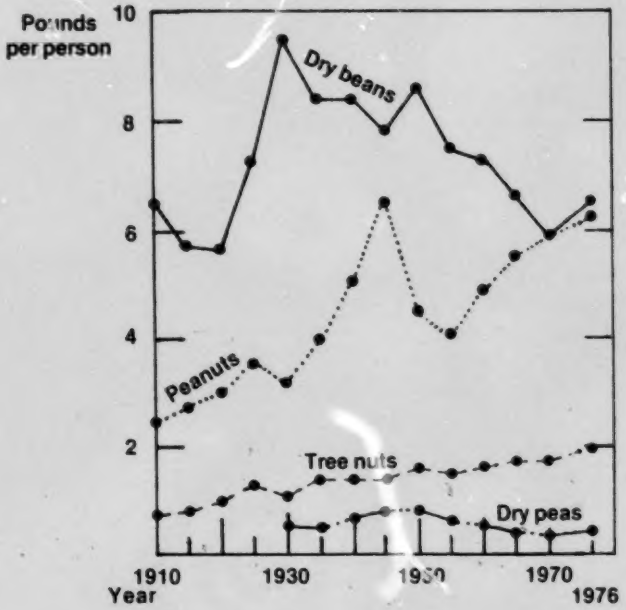
Peanut butter and snack foods made with peanuts no doubt helped spur this recent rise in consumption. In 1975, 46 percent of peanuts were ground into peanut butter; 22 percent were salted for snacks; and 17 percent were made into peanut candy.

As for tree nuts (includes all nuts, except peanuts which are really a legume, and coconuts), walnuts were Americans' favorite in 1976 (0.51 lbs/person), followed closely by almonds (0.44 lbs/person) and pecans (0.30 lbs/person).

We ate more than twice as many tree nuts in 1976 (1.9 lbs/person) than we did in 1910 (0.7 lbs/person).

Dried coconut consumption, which is not included on the graph, was at .47 lbs/person in 1976, down from its peak of 0.89 lbs/person in 1950.

Fig. 2. Bean, Pea and Nut Consumption



Candy

With the motto, "Candy is a delicious food—enjoy some every day," candy makers are trying to reverse the 1970's trend of declining candy consumption.

They were encouraged in 1976 by a slight rise (0.4 pounds) in candy consumption to 16.7 pounds per person (lbs/person) that year. But the industry has its hopes set on getting Americans back to the 20.3 lbs/person they consumed in 1968.

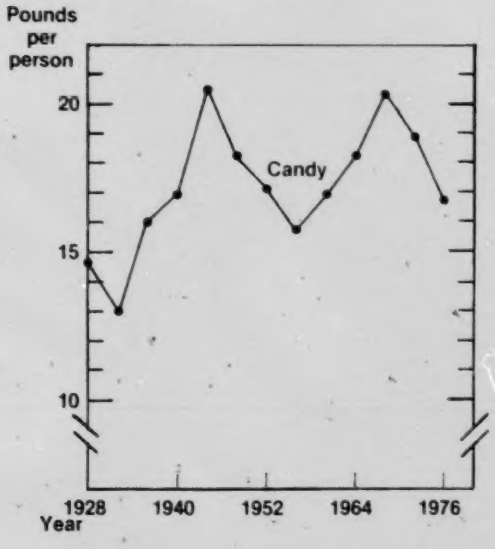
One of the reasons Americans are eating fewer pounds of candy these days is because candy bars weigh less than they did 10 years ago (candy bars comprise about one-third of all candy sold). As cocoa and sugar prices rose, candy bars shrank and became more expensive. (In 1976, 71 percent of all candies were chocolate.)

There may also be less demand for candy because children—the biggest group of candy eaters—are a shrinking proportion of the population. Between 1970 and 1976 alone, for example, the number of people under 13 years of age fell 10 percent.

Finally, consumers may have cut down on their candy consumption as they became more aware of sugar's "empty" calories (no vitamins, minerals, or protein).

And why that peak during the World War II years? Americans may have eaten a lot of candy then because candy was available at a time when sugar was strictly rationed (the candy industry had a substantial allotment of sugar). Moreover, because candy consumption figures include military use, the use of candy in GI rations may have also contributed to the wartim rise in candy consumption.

Fig. 3. Candy Consumption



Coffee, tea, and cocoa

Coffee consumption has had its ups and downs. Between 1910 and 1946, consumption soared from 9.2 pounds per person (460 six-ounce cups) to 20.1 lbs/person (1,005 cups).

Since 1946, though, coffee's popularity has been marching steadily downward. In 1976, Americans, on the average, guzzled only 12.8 lbs/person of coffee, or 560 cups.

(These coffee consumption figures are based on "raw green bean equivalents." Processing reduces the green coffee beans to about one-third of their weight for instant coffee and to about 85 percent for regular coffee. The figures for cups of coffee consumed are estimates.)

The downward trend in coffee consumption corresponds to the tripling of coffee prices between 1945 and 1955. The spiraling prices of the mid-1970's also spurred another cut in consumption. Estimates for 1977 are one to three pounds below the 1976 consumption figures due to the extremely high coffee prices of that year.

But coffee seems to be losing favor with consumers for more than economic reasons. Between 1960 and 1964, prices for coffee fell, yet Americans still drank less.

The declining quality of coffee may have played a part in the decline. In the late 1940's, only three percent of the coffee market consisted of Robusta coffees, which are less expensive coffees characterized by what some people call "bitter flavor." Today, these Robusta coffees comprise nearly 30 percent of the market.

Coffee also seems to be losing ground to the soft drinks Americans are consuming in ever greater amounts. While the 1976 figure of 12.8 lbs/person of coffee was 36 percent lower than the 1946 coffee consumption figure, soft drink consumption nearly quadrupled during that same 30-year period, from 132 to 493 eight-ounce servings per person.

Tea consumption in the United States has ranged between 0.5 and 1.2 lbs/person for the last 65 years. It dropped from one pound per person in 1910 to half a pound per person in 1945, but since then, it has crept back up to the 1976 level of 0.8 lbs/person (160 six-ounce cups).

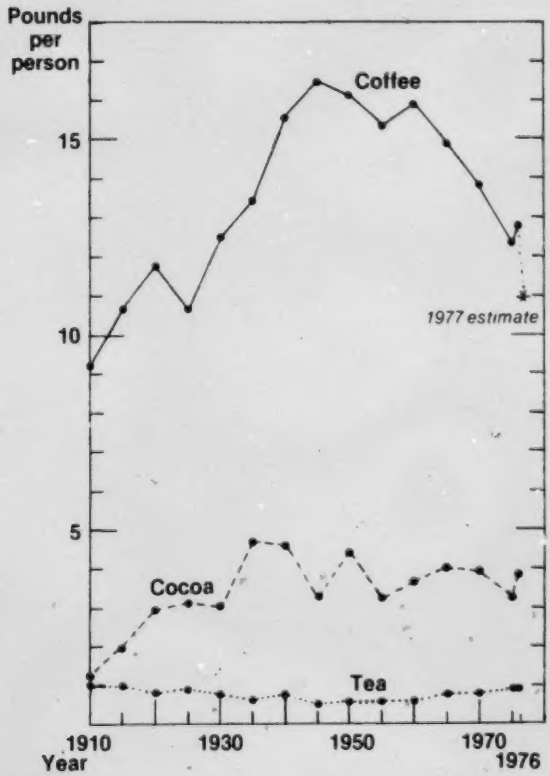
Caffeine, a stimulant that is present in ordinary coffee and tea, has been linked in recent years to adverse effects on reproduction, including reduced fertility, miscarriages, and stillbirths. Most of the studies are on animals, but there is some evidence that caffeine also causes problems in people. As news of these risks becomes more widely publicized, people—particularly pregnant women—will probably reduce their consumption of coffee and tea even further.

As for cocoa, because approximately 85 percent of cocoa beans are used for candy and confections, cocoa consumption reflects trends in the popularity of chocolate candy rather than cocoa beverages.

In 1910, Americans used just under a pound of cocoa beans apiece (retail weights). By the end of the decade, though, that figure had nearly tripled. Since then, cocoa bean consumption has ranged between 3.0 and 4.5 lbs/person.

As cocoa prices soar, candy companies are quickly developing substitutes for cocoa butter. This substitution may reduce cocoa bean consumption in future years.

Fig. 4. Coffee, Tea, and Cocoa Consumption



Eggs

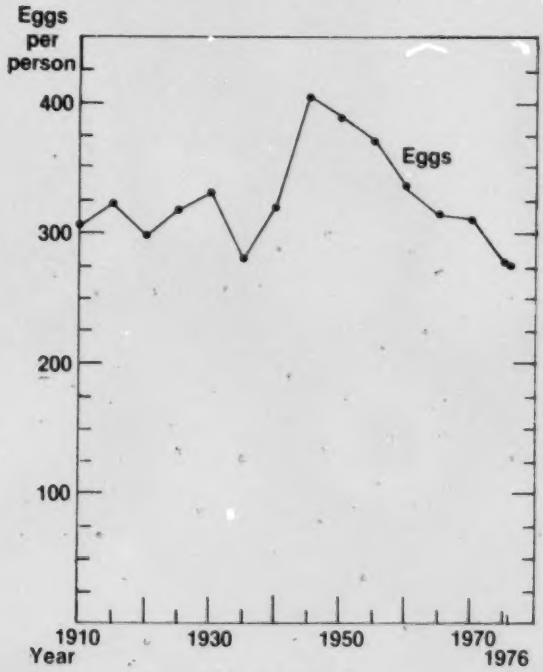
Eggs have been on the decline in America for the last 25 years. In 1976, we ate only 276 eggs per person—two-thirds the 1945 peak of 403. (This includes eggs used in mayonnaise, dried egg whites used in cake mixes, etc.)

We are, though, eating as many eggs per year as our parents and grandparents did in 1935 (280 per person).

Several factors have contributed to the declining use of eggs. More and more women began finding jobs outside the home and, thus, less and less time was devoted to breakfast. Moreover, ready-to-eat cereals gained rapid popularity as a convenient alternative to eggs for breakfast. Studies done in the 1950's did, indeed, show that over half the eggs consumed were eaten at breakfast.

More recently, eggs have lost favor because attention has focused on their high cholesterol content. As the link between dietary cholesterol and heart disease has been publicized, Americans have cut down on their use of eggs.

Fig. 5. Egg Consumption



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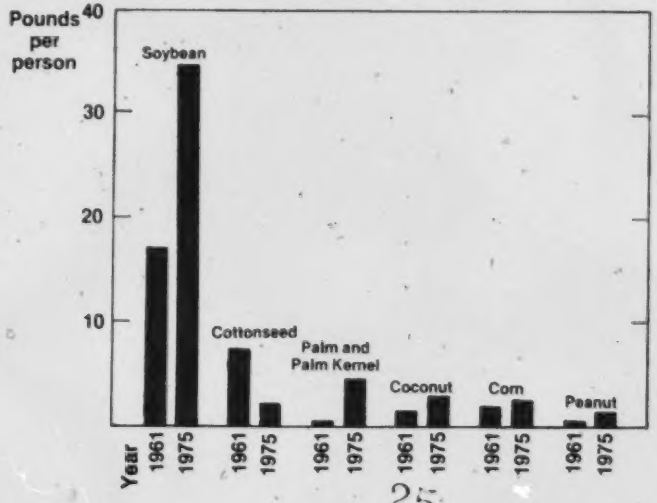
Fats and Oils

USDA breaks down the separated fats and oils that we eat into three categories: 1) table spreads—butter and margarine—[1976: 16.9 pounds per person (lbs/person)], 2) cooking fats [lard and shortening —(1976: 21.0 lbs/person)], and 3) "other edible fats and oils" (1976: 22.0 lbs/person, up from an estimated 1.5 lbs/person in 1910). This last category includes mainly salad and cooking oils such as those used in mayonnaise and salad dressings, in frying potato chips and frozen French fries, and in the bottles of oil we buy at the grocery store. Since 1975, however, only a total figure for "other edible fats and oils" consumption is available. We no longer have figures as to how much oil went to French fry frozen potatoes and how much into commercial mayonnaise and salad dressings.

Figure 6 compares our use of oils (including all vegetable oils—those used in shortening and margarine as well as salad and cooking oils) in 1961 with our use in 1975, dramatizing the overall increase and showing the changing pattern of oils we consume. Soybean oil, which is relatively rich in cholesterol-lowering polyunsaturated fats (except when hydrogenated), is our strong favorite. But unfortunately, the most highly saturated (and therefore most cholesterol-raising) of these vegetable oils, palm and palm kernel (which together amount to our second most used vegetable oil) and coconut (our third favorite), comprise 16% of the oils we use. Safflower oil, the most polyunsaturated, doesn't even make the chart, and corn oil, with somewhat more cholesterol-lowering power than soy, doesn't fare too well either.

Fig. 6. Vegetable Oil Consumption (by kind of oil)



Butter and Margarine

For butter and margarine, 1957 was a landmark year. That year, for the first time, Americans used more margarine than butter in their kitchens—8.6 pounds per person (lbs/person) of margarine and 8.3 lbs/person of butter, for a total of 16.9 lbs/person.

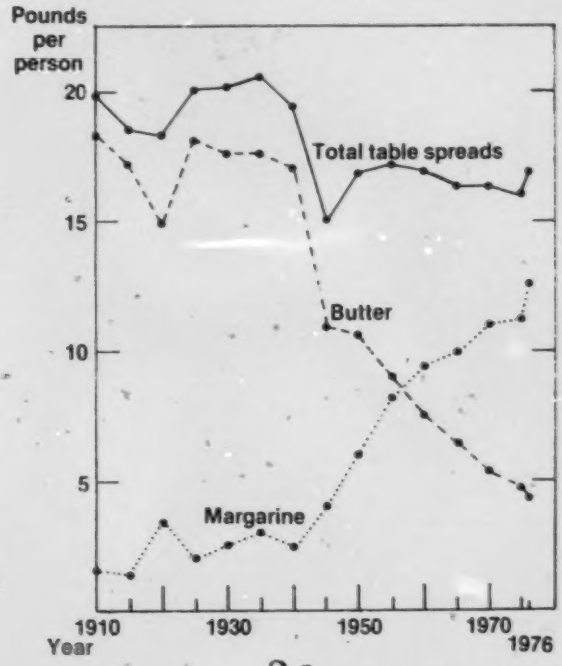
That was quite a switch from our grandparents' days. In 1910, butter consumption was 11 times as great (18.3 lbs/person) as margarine consumption (1.6 lbs/person).

Today, taste aside, butter is almost no match for margarine. In 1976, we ate 12.5 lbs/person of margarine and only 4.4 lbs/person of butter—although the total, 16.9 lbs/person is the same as it was in 1957.

Consumers were first tempted by margarine because it was (and is) less expensive than butter. Then, as margarine's flavor improved over the years, even more people began substituting it for butter.

People have also turned to margarine for health reasons because it contains less cholesterol and saturated fat than butter. New, low-fat margarine may even further expand margarine's share of the market.

Fig. 7. Butter and Margarine Consumption



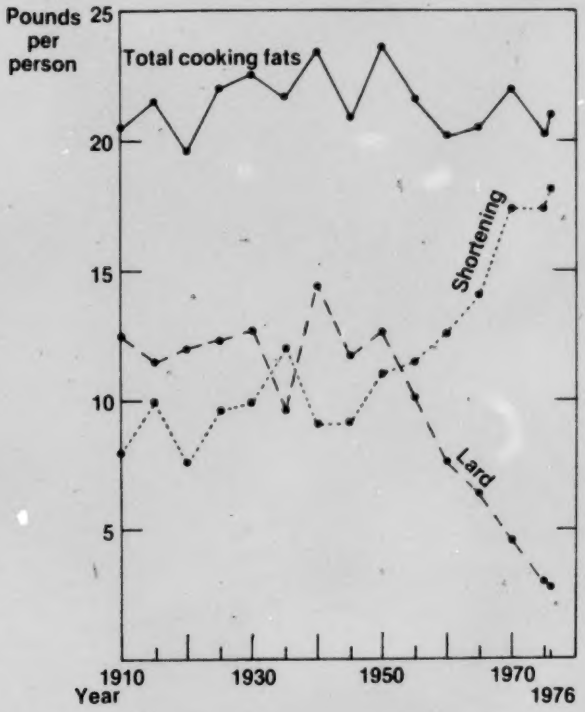
For the record, both margarine and butter are required by government regulation to have at least an 80 percent fat content. To make butter, only salt and coloring may be added to milk and cream. Margarine, on the other hand, is prepared by blending fats and oils with other ingredients, usually milk solids, salt, flavoring materials and vitamins A and D. The fats used to make margarine may be of either animal or vegetable origin, although vegetable fats are by far the most widely used. Recently, imitation margarine having a 60 percent fat content has been marketed.

Cooking Fats

Pure lard (pork fat) is an inexpensive cooking fat. At one time, it was preferred over shortening (a manufactured semi-solid blend of vegetable oils and/or animal fats).

In 1950, however, lard's popularity began to slip. It's been downhill ever since.

Fig. 8. Cooking Fat Consumption



Lard's distinctive flavor and high cholesterol and saturated fat content seem to be the factors that encouraged consumers to switch to shortening. Today, many people are aware that the polyunsaturated oils present in vegetable oil reduce blood cholesterol levels, while the saturated fats in lard raise them.

We do, however, use slightly more lard than this graph indicates. Producers put significant amounts of lard and beef fat into shortening (and some into margarine). In 1976, lard and beef fat comprised 20 per cent of the fats and oils used in shortening—less than in the 1960's, but more than during the first half of the century.

Fish and Shellfish

For the last 65 years, Americans have generally eaten between 10 and 12 pounds per person (lbs/person) of fish (cleaned and deboned) annually. These figures, however, exclude game fish not sold commercially. Game fish consumption is estimated at 2 to 3 lbs/person. Including game fish in the total figures would raise fish consumption by about 20 percent.

Recently, however, that commercial figure jumped sharply to 12.9 lbs/person spurred on by the sudden popularity of fresh and frozen fish.

That popularity apparently reflects the growing sales of fish through fast food outlets. Fresh and frozen fish consumption rose by 42 percent between 1960 (5.7 lbs/person) and 1976 (8.1 lbs/person).

The figures for cured fish, on the other hand, have changed little over the last few decades, remaining at about half a pound per person since 1935. Prior to that, however, cured fish dropped dramatically in popularity from 3.9 lbs/person in 1910 to a mere 0.7 lbs/person in 1935.

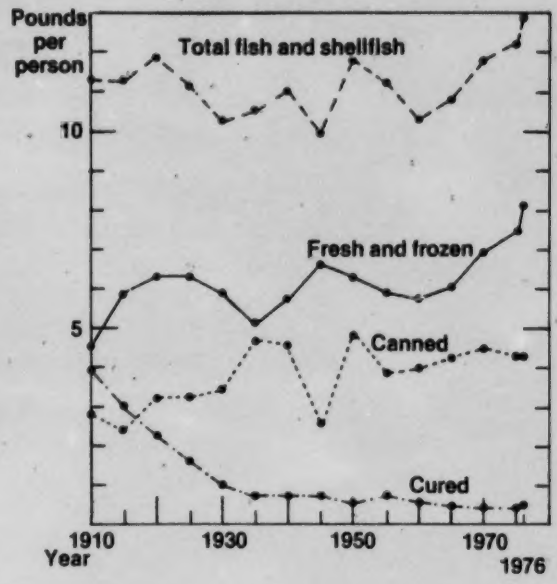
Canned fish use has risen moderately since 1910, except for a sharp decline in the early 1940's. That decline probably stems from the fact that canned fish—an excellent source of easily shipped protein—was diverted during World War II from the civilian population to American military personnel and allies abroad.

We are eating different kinds of canned fish, though, than we were years ago. Much, much more tuna. We ate 0.2 lbs/person of tuna in 1926; in 1974, that figure was up to 3.1 lbs/person.

Tuna took seven percent of the canned fish market in 1926 and two percent of the total fish market; in 1976 those ratios had changed to 65 percent of the canned, and 22 percent of the total.

On the other hand, we are eating much less canned salmon, down from 3.6 lbs/person in 1936 to one-ninth of that, 0.4 lbs/person, in 1976.

Fig. 9 Fish and Shellfish Consumption



Flour and Cereal Products

One of the most remarkable changes in the American diet is our declining use of flour and cereal products. Today, we eat less than half as much flour and cereal as our grandparents did in 1910.

Wheat has always comprised between two-thirds and three-fourths of total flour and cereal product consumption. At least 90 percent of wheat flour is used as white or wholewheat flour, although there are no figures for wholewheat flour consumption alone. The remaining percentage of wheat flour consists of semolina and durum flour from which spaghetti, macaroni and noodles are made. We used 7.2 pounds per person (lbs/person) of semolina and durum flour in 1976, up from the 4.2 lbs/person which our grandparents used in 1910.

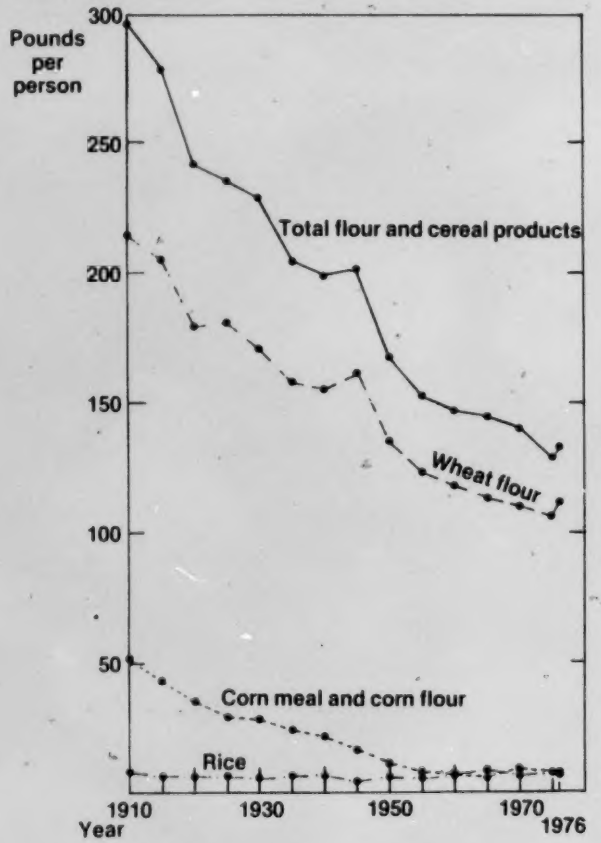
Our grandparents consumed more of a variety of grains than we do today. Since 1910, rye consumption has fallen from 3.6 to 0.8 lbs/person (1976), while use of barley products dropped from 3.5 to 1.2 lbs/person. Buckwheat consumption dipped from 2.1 lbs/person in 1910 to less than 0.05 lbs/person by the early 1960's.

Consumption of corn flour and corn meal has also tumbled drastically. Our grandparents in 1910 used seven times (51.1 lbs/person) what we did in 1976 (7.7 lbs/person). In 1976, corn flour and corn meal made up a mere 5 percent of all flour and cereal consumption as compared to their 17 percent share in 1910.

Rice consumption, on the other hand, has remained fairly constant since 1910. At 7.2 lbs/person in 1976, it makes up 5 percent of total flour and cereal use.

A few of the less common grains and cereals are also holding their own. During the last 15 years, hominy and grits consumption has stayed just above 4 lbs/person while wheat cereal consumption has been just below 3 lbs/person. For the last 30 years, Americans have used between 3 and 4 lbs/person of oat food products—oatmeal, oat cereals, and infant foods. Corn starch use grew to 1.9 lbs/person in 1976.

Fig. 10. Flour and Cereal Product Consumption



Foods like bread and wholegrain cereals are being replaced by sweeter, more fatty foods in our diet. Whereas flour and cereal products supplied 38 percent of our calories in the 1909-13 period, they furnished only 19 percent of our calories in 1976.

Flour and cereal products also used to be Americans' chief source of protein. In 1976, however they provided only 17 percent (18 grams) of our protein, down from the 36 percent (38 grams) of protein they provided in 1909-13.

Ironically, bread's undeserved but reputed high calorie content may have encouraged people to switch to the less nutritious and potentially more dangerous fats and sugars which are pushing wholesome starchy foods out of our diet.

Flour and cereal products are important sources of carbohydrate—a basic component of our diet. The overall drop in carbohydrate intake over the last 65 years is largely a result of our decreasing use of flour and cereals. Our grandparents consumed 276 grams per person per day of carbohydrates from flour and cereals, while we, in 1976, only got half that amount (about 138 gms/person/day) from the same source.

Food Colorings

It is impossible to know exactly how many pounds of artificial colors, flavors, and preservatives we ingest annually.

We do, however, have figures for the amounts of coal-tar-based colors which the Food and Drug Administration (FDA) certifies each year for use in various foods, drugs, and cosmetics (a full 95 percent of these colors are used in foods). The increase in food color use probably reflects the use of other additives in our food as well as the extent to which fabricated and "junk" foods have entered the American diet.

In 1940, 0.03 ounces per person (less than one gram) of coal-tar colors were certified by FDA. Since then, the use of certified colors has increased 11 times to the (fiscal year) 1977 level of 0.34 ounces per person—more than nine grams.

But after three decades, it looks like the increases may be tapering off slightly.

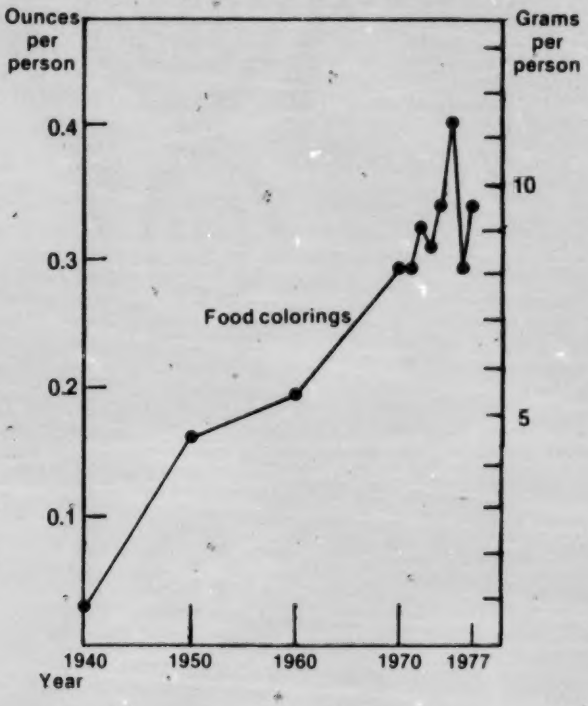
The dramatic dip in the amount of food colors certified in 1976 reflects FDA's removal of one of the most popular dyes, Red No. 2, from the agency's approved list. The removal was made after animal studies linked ingestion of that coloring with cancer.

The subsequent rise in the amounts of colors certified in 1977, however, suggests that the food coloring industry adjusted to the removal of Red No. 2 by promoting other certified colors.

Yet other removals may follow. As a result, in the future some manufacturers may switch to the probably safer, non-certified colors (carotene, beet juice extract, caramel, etc.). Others may remove artificial colorings altogether.

This will be hardest for the companies who depend on artificial coloring to replace a real food in their product—those, for example, who substitute yellow coloring for eggs or fruit, or caramel coloring for wholewheat flour.

Fig. 11. Food Coloring Consumption



Frozen Foods

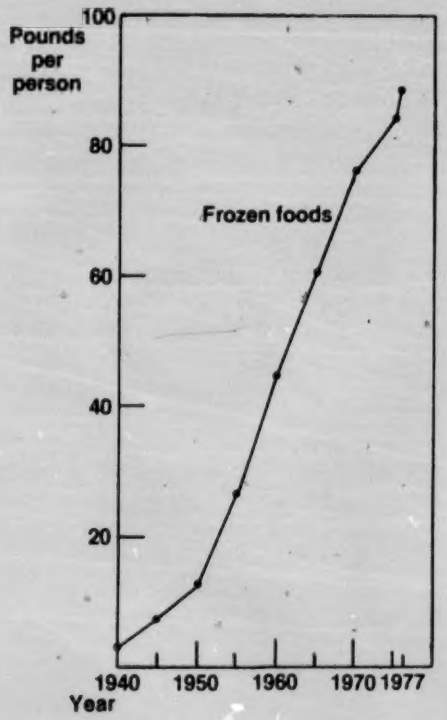
The popularity of frozen foods has skyrocketed since they were first marketed about forty years ago. From 3.1 pounds per person (lbs/person) in 1940, sale of frozen foods accelerated quickly to 88.8 lbs/person in 1976.

Not surprisingly, this has meant a big leap in the amount Americans spend on frozen foods. Whereas the average American only bought $1.93 worth of frozen foods in 1945, by 1976 Americans spent $77.79 per capita on frozen foods.

More and more different kinds of food are appearing on supermarket freezer shelves, everything from frozen pizzas to fish sticks and onion rings. In 1976, the nearly 90 pounds/person of frozen foods Americans ate consisted of:

- 25 lbs/person of frozen vegetables (includes potatoes: 60 percent of this category)
- 23 lbs/person of prepared foods (everything from meat pies to frozen waffles)
- 12 lbs/person of frozen poultry
- 12 lbs/person of frozen fruit juice concentrate (about 150 four-ounce servings of juice)
- 8 lbs/person of frozen seafood(everything from fish sticks to frozen lobster tails)
- 6 lbs/person of frozen meats
- 3 lbs/person of frozen fruit (more than a third of which were strawberries)

Fig. 12. Frozen Food Consumption

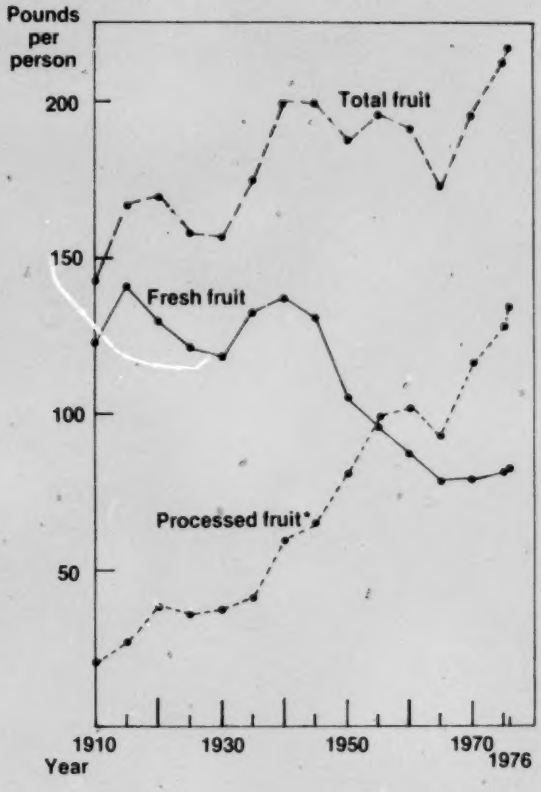


Fruit

We are eating more fruit these days, although most of it is processed.*

In fact, we have more than tripled our consumption of processed fruit (dried, canned, chilled, and frozen) from 1930 to 1976, while during the same period we cut back eating fresh fruit by one-third.

Fig. 13. Fruit Consumption



*All figures used for processed fruits are "fresh equivalent" weights. These exaggerate apparent consumption. For example, under "fresh equivalency" eight ounces of frozen orange juice concentrate is converted to the weight of fresh oranges needed to make up the concentrate—approximately three pounds. But by using "fresh equivalents", we are able to compare the consumption of fresh and processed fruit.

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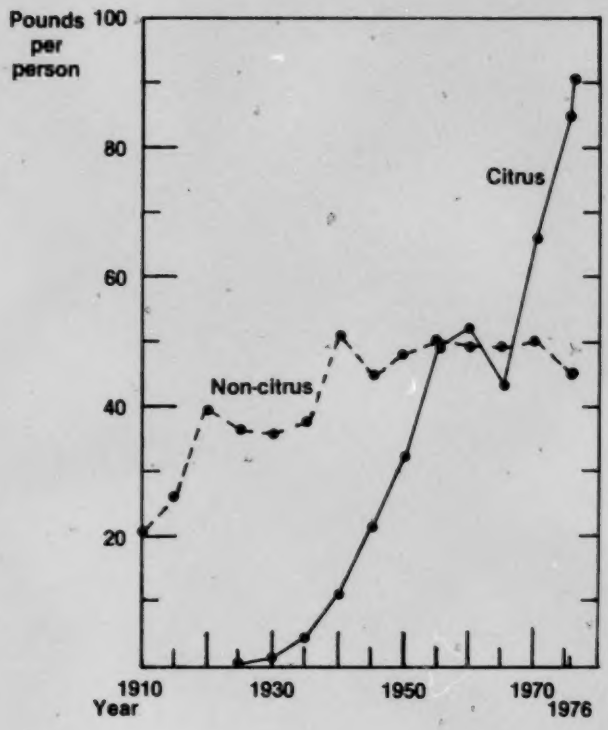
Several factors are responsible. First, prices for fresh fruits and vegetables jumped in the 1950-66 period by 60 percent (more than any other major food group) while prices for processed fruits and vegetables increased by only 35 percent. Prices for frozen orange juice actually declined during that period. Such a difference in cost encouraged shoppers to choose processed over fresh fruit.

New technology also had its impact as more and more kinds of processed fruit became available. Production of frozen citrus juice (a post-World War II invention), for instance, had a tremendous impact on fruit consumption. Americans drank 44 times as much frozen citrus juice in 1952 (42 four-ounce servings per person) as they did in 1948 (less than a single four-ounce serving per person). Frozen citrus

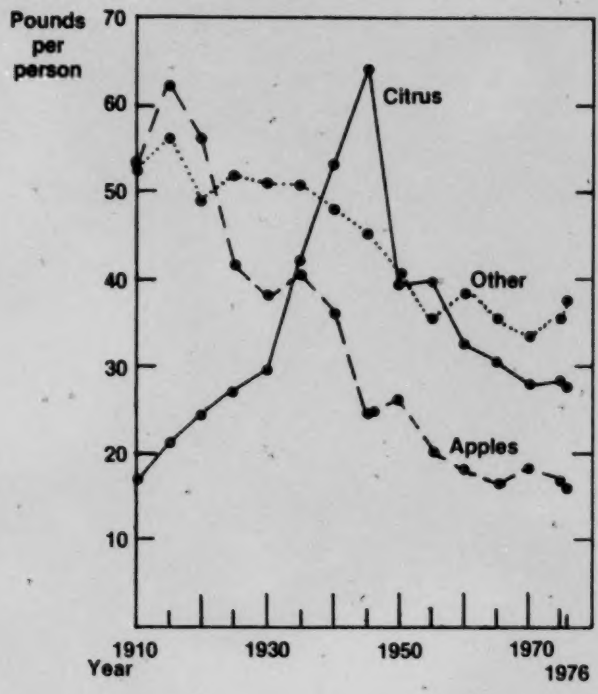
Fig. 14. Processed Fruit Consumption



juice has comprised at least one-half of processed citrus fruit consumption since 1952. By 1976 we drank 117 four-ounce servings apiece of frozen citrus juice (110 servings of orange juice).

The weather has also affected our consumption of fruit. Severe weather in the early 1960's (which damaged crops) helps explain the drop in fruit consumption during that period.

Fig. 15. Fresh Fruit Consumption



A few other fruity statistics:

- Bananas were our favorite form of fresh fruit in 1976 (19.5 lbs/person; 36 percent of the fresh fruit market).
- Apples ranked second with 20 percent of the market (16.3 lbs/person).
- Consumption of apples has declined substantially from the 53.5 lbs/person we ate in 1910 (43 percent of the fresh fruit market that year).

• We ate far more fresh oranges before processed orange juice came on the market. In 1944, we ate 45.2 lbs/person of fresh oranges; in 1976, only 14.4 lbs/person.

• Fresh grapefruit consumption was also down, from 13.3 lbs/person in 1946 to 9.0 lbs/person in 1976. Still, we ate nine times as much grapefruit as we did in 1910 (1.0 lbs/person).

Ice Cream, Ice Milk, and Other Frozen Dairy Products

We may all scream for ice cream, but more and more frequently, what we are getting is ice milk.

And there is a difference. Government regulations require that ice cream have a minimum 10 percent fat content; but in ice milk, the fat content can be as low as two percent.

The major reason for our higher consumption of ice milk is that, in its soft form, ice milk is used in cones and shakes at fast-food shops. And as fast-food restaurants became popular, so rose the ice milk consumption figures: in 1950, we ate 1.2 pounds per person (lbs/person); in 1975, that figure was up to 7.8 lbs/person. (A "standard" gallon of ice milk or ice cream weighs about 4.5 pounds.)

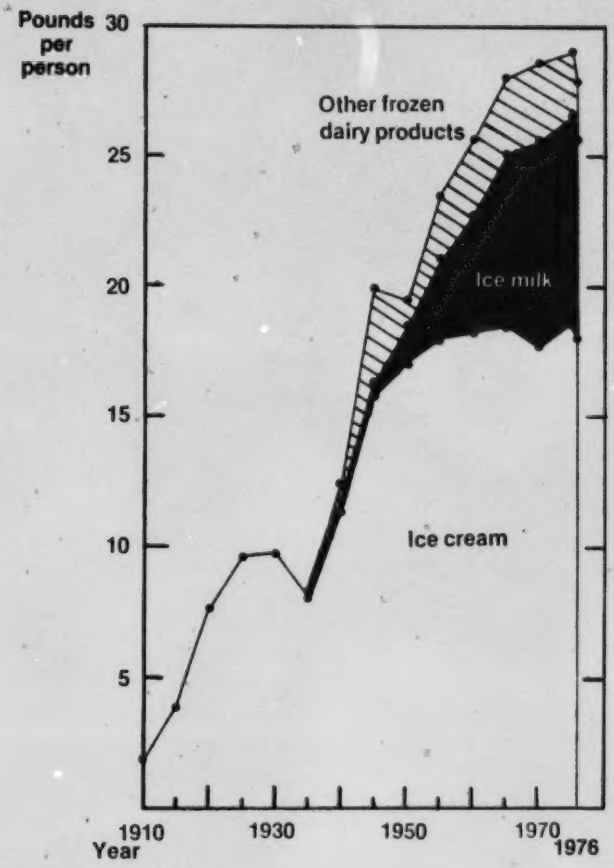
We are eating more ice cream, also, although the increase may have been stemmed by the shift to ice milk. The big growth in ice cream consumption came between 1910 (1.9 lbs/person) and 1950 (17.2 lbs/person). (This does not include home-churned ice cream.)

We do not eat much more ice cream than we did 20 years ago (1976: 18.1 lbs/person), but we are switching to higher quality products—ice creams with more fat and less air whipped in. We may regret this switch as we learn more about the connection between fat and heart disease.

Even though ice cream parlors seem to boast more and more newly synthesized flavors, vanilla nonetheless cornered 42 percent of the ice cream and ice milk market in 1976. Chocolate came up a poor second with 12 percent of the market while nut flavors took another 9 percent in that year.

The "other frozen dairy products" category on the chart refers to sherbet (steady at about 1.5 lbs/person since 1955) and more recently developed frozen dairy products (also around 1.5 lbs/person). This last group includes mellorine, an "ice cream" in which vegetable fat replaces the butterfat—but it does not include frozen yogurt.

Fig. 16. Frozen Dairy Product Consumption



Meat

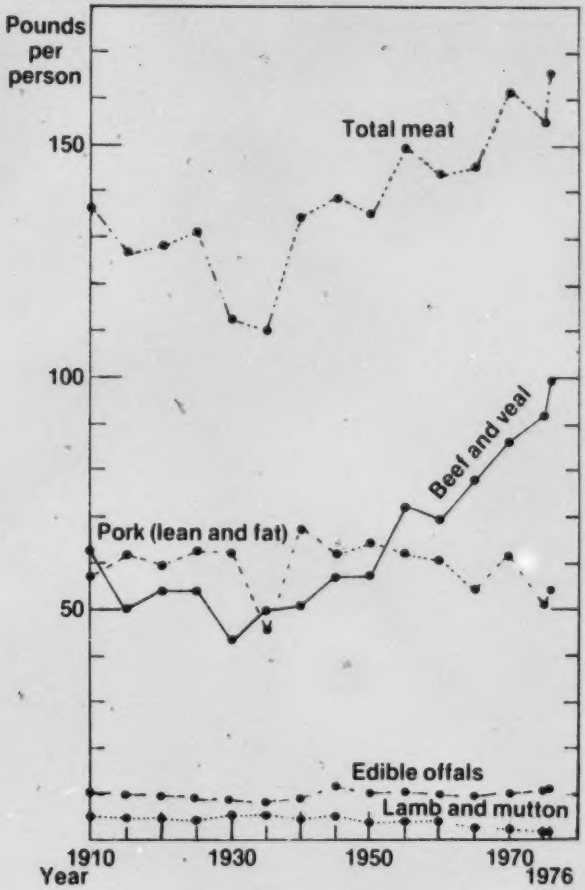
Americans ate more red meat in 1976 than ever before.

That year we gobbled 165.2 pounds of red meat per person (lbs/person), about 30 pounds more than in 1910 (136.2 lbs/person), and about 40 pounds more than in 1930 (121.7 lbs/person).

(These figures represent the retail weight of meat, rather than the weight of the carcass. They also represent the weight of the meat before it is processed. Therefore, they exaggerate consumption somewhat because they include fat and water which is trimmed away or lost when the meat is cooked or processed.)

Beef is responsible for the rise in red meat consumption over the past 65 years. Although it took a dip in popularity between the years 1910 and 1930 (from 55.5 to 38.6 lbs/person), beef has been making a steady comeback since then, reaching an all-time high of 95.4 lbs/person in 1976.

Fig. 17. Meat Consumption



In the meantime, we're eating less of the other meats. A few notes on the subject:

- Veal consumption (combined with beef on the graph) peaked at about 11 lbs/person in 1944-45 and then dropped to 3.4 lbs/person in 1976.
- Lamb and mutton consumption fell from 5.8 lbs/person in 1910 to 1.7 lbs/person in 1976.
- Even pork consumption, at 57.9 lbs/person in 1910, was down slightly to 54.1 lbs/person in 1976. "Modern" pork, however, is much leaner than pre-1950 pork, so there is less waste.
- Consumption of edible offals (organ meats, trimmings), steady at about 10 lbs/person throughout this century, comprised the remaining portion of total red meat consumption.

Our increased red meat consumption contributes to our increased intake of dietary fat. In 1976, 30% of our dietary fat intake came from red meats. Though separated fats and oils (margarine, butter, vegetable oil, etc.) provide most of our unsaturated fat, meat is furnishing us with higher levels of saturated fats and cholesterol than in years past.

The Department of Agriculture's beef grading system encourages greater saturated fat consumption by giving the highest rating—prime—to the fattiest cuts of meat.

Melons

We eat fewer melons today than either our parents or grandparents did in their days.

Why? Probably because melons never turn up in the canned or frozen sections of our supermarkets where we do most of our shopping for fruit these days. Melons are virtually always sold fresh.

Consumption of cantaloupes (including honeydew and honeyball melons) has traditionally ranged between six and nine pounds per person (lbs/person). In 1976, consumption was down in the lower part of that spectrum: 6.4 lbs/person.

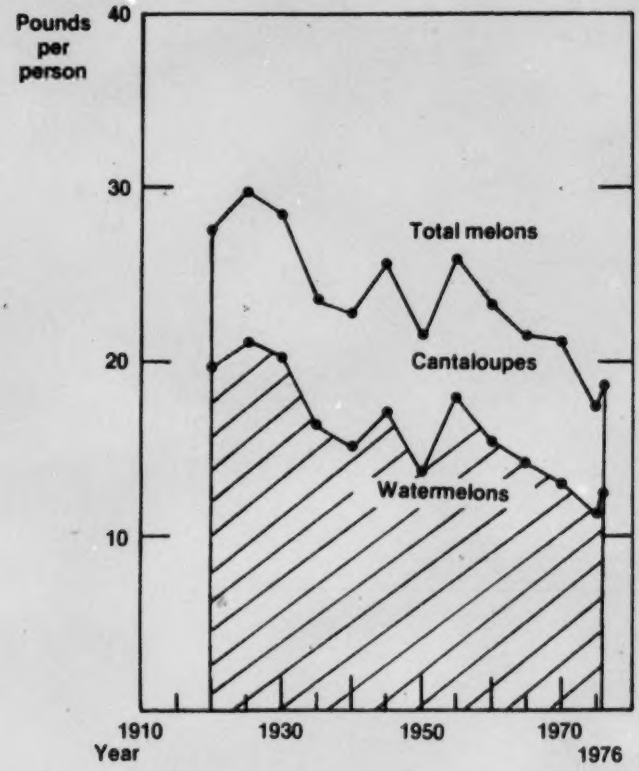
Watermelons have also been on the decline. While our grandparents ate about 20 pounds apiece through the 1920's, consumption dipped to its lowest point ever in 1974 (10.8 lbs/person) before rising slightly to 12.2 lbs/person in 1976.

These consumption figures only include those melons which were marketed. If we knew how many melons were consumed from home gardens, the decline in consumption would be even more striking. Rough estimates from the Department of Agriculture indicate that our grandparents consumed another 18 pounds of melons apiece from

their own gardens whereas we only get about four pounds per person from home gardens today.

This means that total melon consumption in 1976 dropped to half the 1910 level. From a nutritional standpoint, that is unfortunate, because melons are an excellent low-calorie source of vitamins.

Fig. 18. Melon Consumption



Milk and Cheese

We are drinking less whole milk and cream than our grandparents did in 1910. Low-fat milk, on the other hand, is more popular than ever.

Still, the increased use of low-fat milk has not been able to offset the general decline in milk consumption that began almost 20 years ago.

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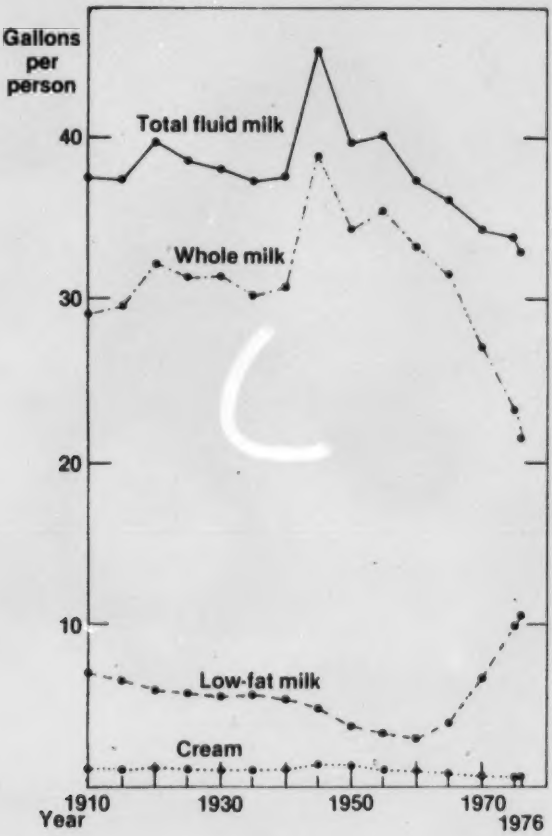
The changing composition of the American population partially explains the decreasing use of whole milk. Children drink more whole milk than any other age group. As the proportion of children in the United States has declined over the last 20 years, so has the consumption of whole milk.

During and after World War II, on the other hand, children made up a larger percentage of the population and thus milk consumption was up.

Fig. 19. Milk Consumption



Other factors, like adults' growing preference for the healthier, low-fat milk, have also contributed to whole milk's decline in popularity (from 29.3 gallons per person in 1910 to 21.5 gallons/person in 1976).

Soft drinks may also be luring people away from milk. Soft drinks are cheap, shelf-stable and well-advertised. Unfortunately, they are also calorie-filled and nutrient-empty. Yet Americans cut back on their combined whole and skim milk consumption by about 5 gallons apiece between 1960 and 1976 while they increased their intake of soft drinks by 19 gallons a person.

Americans have also steadily reduced their use of cream over the years. Their concern over the health hazards of cream's high fat and calorie content may have been the reason they dropped their consumption of the dairy product from 1.3 gallons/person in 1909 to 0.7 gallons/person in 1976. The development of processed cream substitutes also played a role in pushing fresh cream out of the refrigerator.

But in 1976, consumption of low-fat milk, which includes buttermilk and all low-fat fluid items (non-fat, one percent fat, and two percent fat), was higher than ever. Americans averaged 10.6 gallons of these foods that year, three times what they drank only 15 years earlier (3.2 gallons/person).

The growing number of people who are concerned about their intake of calories and fat accounts for part of this increase. The surging popularity of yogurt is also partly responsible. Yogurt consumption more than quadrupled between 1967 and 1976, to just over two pounds per person.

As for cheese, in 1976 we ate more than ever—20.7 pounds per person (lbs/person) or four times what our grandparents ate in 1910 (4.9 lbs/person).

Most of the growth in cheese consumption came during the last 15 years. We ate 69 percent more American cheese in 1976 (9.1 lbs/person) than in 1960 (5.4 lbs/person). We also ate 6.8 lbs/person of other kinds of cheeses in 1976, a full 134 percent more than the 2.9 lbs/person we ate in 1960.

The increasing use of mozzarella, the favorite pizza cheese, was a major factor in the increase in this "other cheeses" category.

The cottage cheese component of the "other cheeses" category, on the other hand, has remained at about 5 lbs/person throughout the last 15 years (pot cheese and baker's cheese are included with cottage cheese).

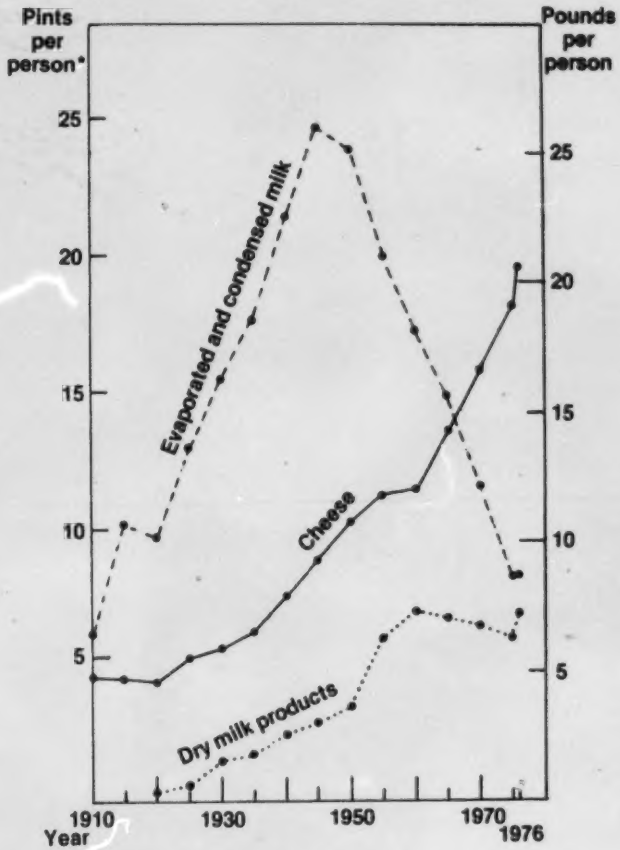
In the dry milk category, most of the products we use are low-fat. Non-fat dry milk made up most of our dry milk consumption up until the 1970's. Then, dry whey, an economical and low-fat by-product of cheese, began to be substituted for dry milk.

So, while we used 6.2 lbs/person of dry non-fat milk and 0.3 lbs/person of dry whey in 1960, by 1976 we had cut back to 3.6 lbs/person of dry non-fat milk and increased to 3.1 lbs/person of dry whey.

Small amounts of dry whole milk, dry buttermilk, and malted milk made up the rest of the dry milk products category.

Evaporated and condensed milk have been on a sharp decline since 1950. Canned milk probably was particularly convenient to the pre-1940's consumers who could not depend on refrigeration. Since then, though, canned milk has lost favor with consumers.

Fig. 20. Cheese and Milk Product Consumption



*Fluid equivalents apply to evaporated and condensed milk only.

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Potatoes

Only the relatively recent popularity of frozen french fries has reversed the trend that Americans had been following toward eating fewer and fewer potatoes.

Five and one-half times as many potatoes were frozen in 1976 (36.8 lbs/person) as in 1960 (6.6 lbs/person). French fries were the reason. Seven-eighths of all frozen potatoes were sold as french fries in 1976. Most were used by fast food restaurants. Only one-fourth of the frozen french fries were sold in grocery stores.

Fresh potatoes, on the other hand, have been losing ground with the American public. From 1960 to 1976, they fell in popularity from 80.4 lbs/person to 48.3 lbs/person.

If we included estimates for consumption of home grown potatoes (except the products of farm gardens which are already included in the potato figures), the drop in potato consumption would be even more striking. Rough approximations from the Department of Agriculture (USDA) indicate that home production of potatoes dropped from 15 lbs/person in 1910 to about 3 lbs/person by the 1960's.

Economics help explain part of the fresh potato's decline. According to the Retail Food Price Index, prices for fresh potatoes nearly quintupled between 1940 and 1975. On the other hand, prices for processed potatoes rose slowly. Frozen french fries even dropped in price, almost six percent between 1960 and 1971. During that same period, prices for fresh potatoes rose 48 percent. (Between 1970 and 1975, prices for both rose about 50 percent.)

Yet, despite the price increases, fresh potatoes are among the least expensive foods at the supermarket. Why, then, are Americans eating fewer of them? Partly, because of the potato's undeserved reputation for being fattening. Few people realize that a medium-sized potato has fewer calories than a single tablespoon of butter spread over it. In fact, potatoes are very nutritious. They are a good source of vitamin C; sweet potatoes are also chock-full of vitamin A. Moreover, few modern Americans think of potatoes as the "convenience" foods they are. Yet what could be more convenient than keeping a bowl of boiled potatoes in the refrigerator?

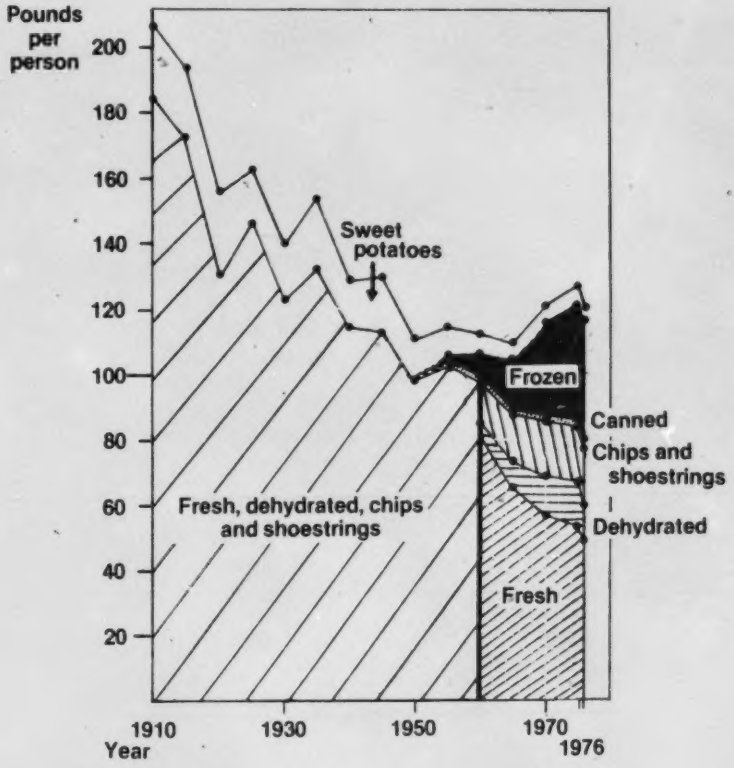
A few other potato statistics:

- Since 1960, the use of potatoes for dehydration tripled, from 4.9 lbs/person to 14.5 lbs/person in 1975.
- In 1960, 11.6 lbs/person of potatoes went to make potato chips and shoestrings while in 1976, 16.3 lbs/person ended up as chips and shoestrings.
- Canned potato consumption has been relatively insignificant, never reaching three per cent of total potato consumption.

• Sweet potato consumption plunged from 22.5 lbs/person in 1910 to 4.4 lbs/person in 1971. Since then, it has climbed back to 5.4 lbs/person in 1976. About one-third of all sweet potatoes are sold in cans; the rest go to market fresh.

In 1960, the USDA began separating consumption statistics for dehydrated potatoes, potato chips, and shoestring potatoes from those for fresh potatoes (see graph). By making this distinction, they have highlighted the drop in consumption of fresh potatoes and the increase in consumption of processed potatoes in recent years.

Fig. 21. Potato Consumption



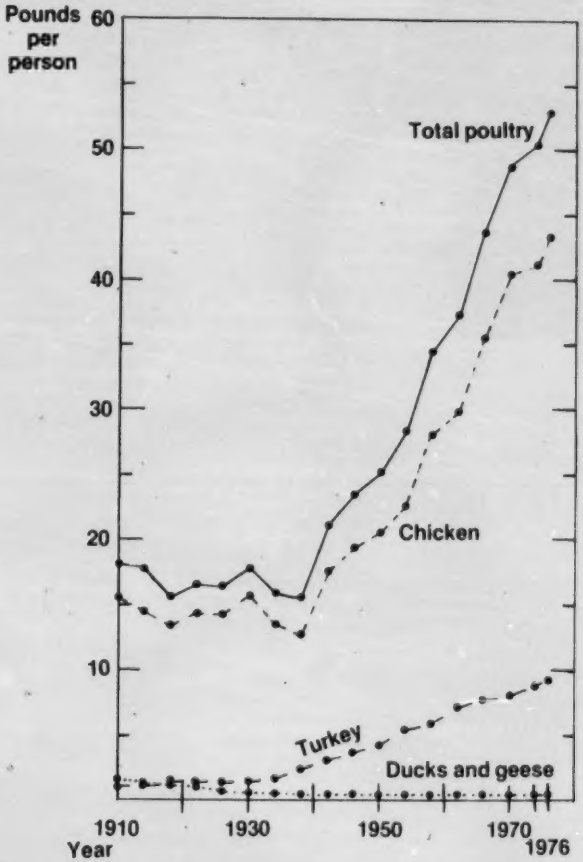
*Retail weights used for fresh potatoes and sweet potatoes. Farm weights used for all other kinds of potatoes.

Poultry

Americans ate nearly three times as much poultry in 1976 [52.9 pounds per person (lbs/person)] as in 1910 (18.0 lbs/person). The increase has been particularly marked in recent years. In less than 40 years, consumption rose from a low of 15.5 lbs/person in 1938 to the 1976 high of nearly 53 pounds per person.

Chicken comprises most (about 80 percent) of the poultry category. Consumption of this favorite rose from 15.5 lbs/person in 1910 to 43.3 lbs/person in 1976.

Fig. 22. Poultry Consumption



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But Americans are also gobbling more turkey than ever before. We ate more than nine times as much turkey in 1976 (9.2 lbs/person) as in 1910 (about 1.0 lbs/person). From six percent of the 1910 poultry market, turkey consumption rose to capture 15 percent of the market in 1940. Since then it has edged up to a 17 percent share in 1976.

Perhaps Americans' fondness of turkey helped push ducks and geese off our dinner plates. At about 0.4 lbs/person in 1976, ducks and geese comprises less than one percent of total poultry consumption whereas they made up eight percent of the market in 1910 (about 1.5 lbs/person).

Poultry consumption has also increased as a percentage of total red meat, fish and poultry consumption. Whereas poultry made up only 10 percent of the 1925 meat/fish/poultry market, by 1976 it comprised 23 percent of the total.

Poultry production has been transformed since the 1930's. Mass production and marketing techniques have enabled modern producers to raise hundreds of thousands of poultry at once in a single enormous facility, nearly eliminating the small scale farmer as a source of poultry. The new methods have made possible the lower prices that encourage Americans to eat more poultry. Unfortunately, the new style poultry factories increase the risk of poultry diseases and have necessitated the use of safe and unsafe animal drugs.

The advent of fast food restaurants serving chicken also spurred poultry consumption in the last twenty years. The manufacture of processed poultry sandwich "meats" and chicken hot dogs may boost poultry consumption even further.

Soft Drinks

1976 was a landmark year for the soft drink industry. Americans drank 493 eight-ounce servings of soda pop each that year—an all-time high and a 12.3 percent (54 serving) increase over 1975.

For soft drink companies, that increase meant lusty profits. National sales totaled $10.4 *billion* (wholesale only), six times 1960's relatively pale $1.7 billion.

This rise in soft drink sales is a cause for concern because Americans get so much sugar from soft drinks. In 1976, one-fourth of our total sucrose (cane and beet sugar) consumption (23.2 pounds per person) came through soft drinks. But even the 23.2 pound figure is a rough estimate that excludes the sugar-filled fruit drinks which may provide up to another 10 percent of our sucrose consumption.

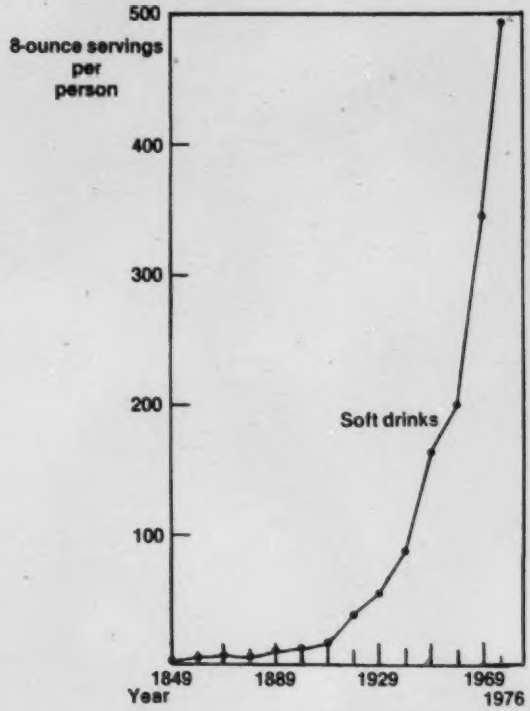
No wonder, then, that the Senate Select Committee on Nutrition and Human Needs focused on reducing soft drink consumption in its *Dietary Goals for the United States.* Citing research which im-

plicates sugar in tooth decay and diabetes, the committee recommended cutting back on soft drinks as the most obvious way to lower sugar intake. In addition, the committee noted that if we guzzled fewer soft drinks, we would take in less caffeine and fewer non-nutritive additives, colors, flavors, and preservatives.

A few miscellaneous words about soft drinks:

- Diet soft drinks accounted for only 11 percent of sales in 1976.
- Cola was the strong favorite in both diet and non-diet categories, sweeping 53 percent of the diet sales and 63 percent of the non-diet.
- Most soft drinks were distributed through food stores (55 per cent). Vending machines peddled another 21 percent. The remainder were sold through a variety of retail sources and other outlets.
- Watch for powdered carbonated drinks—the next thing to come from the soft drink industry.

Fig. 23. Soft Drink Consumption

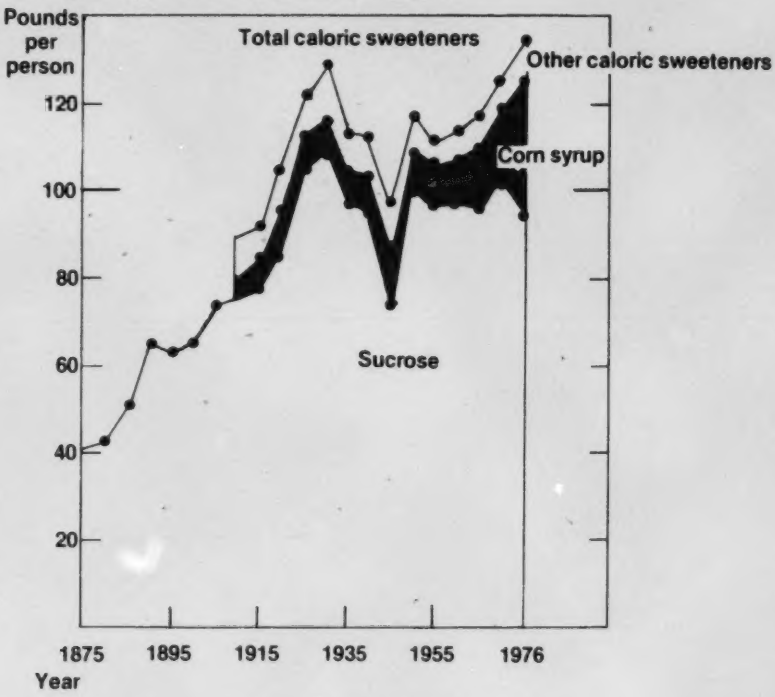


Sweeteners

In 1976, Americans ate more caloric sweeteners (consisting of 71 percent sucrose—the scientific name for cane and beet sugar—ordinary table sugar, 24 percent corn syrup, and 5 percent other sweeteners) than ever before.

Our sweet tooth must be getting sweeter. Not only are we eating record levels of caloric sweeteners, but saccharin (a non-caloric sweetener) consumption has also risen sharply. In 1976, we used four times as much saccharin as we did in 1960 [1976: 8.0 pounds per person (lbs/person)] on a sugar-equivalent basis, which assumes that saccharin is 300 times as sweet as sucrose. Cyclamate use flourished briefly before it was suspected of causing cancer and removed from the market in 1969, although consumption never rose above the 2.2 lbs/person peak reached in 1968 (again, a sugar-equivalency figure is used; cyclamates are assumed to be 30 times as sweet as sucrose).

Fig. 24. Caloric Sweetener Consumption *



*1875-1908 data from U.S. Bureau of Census—*Historical Statistics of the United States, Colonial Times to 1959.*

We still use more sucrose than all the other sweeteners combined. Sucrose consumption in 1976 (94.8 lbs/person) was more than twice what it was 100 years ago, and 29 per cent above the 1909 level (73.7 lbs/person). 1976 sucrose consumption was, however, well below the 1930 peak of 109.6 lbs/person. But sucrose consumption figures during the prohibition years may have been artificially high, because extraordinary quantities may have been used to make bootleg liquor.

Even though we still rely on sucrose as our chief sweetener, its use has been dropping off in recent years, while corn syrup consumption has skyrocketed. Corn syrup's popularity rose suddenly in the 1960's when researchers developed a new corn syrup ("high-fructose") that was sweeter—about as sweet as sucrose. In 1976, we ate 32.7 lbs/person of corn syrup (24 percent of total caloric sweeteners), more than triple the 10.1 lbs/person we ate in 1960 (when corn syrup represented 9 percent of total caloric sweetener consumption).

The way we obtain our sweeteners has also changed over the years. In 1909-13, only 25 percent of the cane and beet sugar we consumed was already processed in the food and beverages we bought. Consumers purchased virtually all the rest in bags and added it themselves. By 1976, the situation was reversed. In that year, we directly added only 25 percent of the cane and beet sugar we used. Almost all the rest was present in the food and beverages we bought—in everything from obviously sweetened products like soft drinks (soft drinks accounted for about one-quarter of sucrose consumption in 1976) to foods such as hot dogs and tomato catsup, which many consumers probably never realize contain sugar. This shift toward processors' use of sweeteners would be more noticeable if we had figures for home versus factory addition of corn syrup, because the corn syrup on which we rely more and more for sweetness is virtually always added industrially.

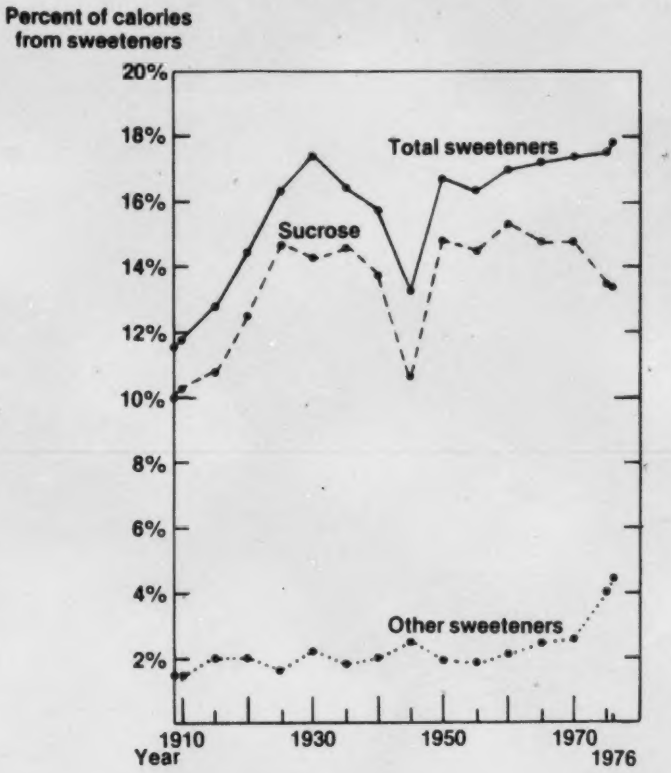
The nutritional significance of our increasing sweetener consumption is best illustrated by figure 25 which shows the percentage of the calories we consume that come from sweeteners. The change between 1909 and 1976 is striking. Whereas sweeteners provided 11.5 percent of our calories in 1909, by 1976 they furnished 17.8 percent of our calories. Most of that increase came before 1930, although consumption plummeted during the sugar-rationed years of World War II and then climbed back up again. Nonetheless, in 1976, sweeteners provided more of our calories than they ever had before.

Sweeteners furnish virtually nothing but calories to our diet. They are simple carbohydrates that supply no protein, no fat, no vitamins, no dietary fiber, and practically no minerals—hence the term "empty calories." Sweeteners have become a problem in our diet because their "empty calories" either replace more nutritious sources of calories, or

they contribute extra calories to the diet and so may lead to obesity. Obesity in turn increases the risk of heart disease, diabetes, and other health problems. Moreover, the sweeteners cause tooth decay—particularly when eaten in sticky foods or as between meal snacks.

Because food manufacturers add most of the sweeteners to our food, it is virtually impossible for people to know how much sweetener they ingest. Only clear labeling of the sweetener content of processed foods will enable today's consumers to control the amount of sweeteners they eat.

Fig. 25. Sweeteners as a percentage of daily calorie consumption



Vegetables

Despite all the evidence that diets in the United States leave much to be desired, Americans have been consuming—except for a few years following World War II—more and more vegetables, excellent sources of most vitamins and minerals.

But these figures only include vegetables which were marketed. If we had reliable figures for home garden production of vegetables, the increase in vegetable consumption might be less dramatic. Although the Department of Agriculture's (USDA's) estimates of home garden vegetable production [at 126 pounds per person (lbs/person) in 1910 and 50 lbs/person from 1962 onward] seem extraordinarily high, our grandparents undoubtedly did consume more vegetables from their own gardens than we do today. USDA acknowledges that estimates of home-grown foods are unreliable.

Still, the increase in consumption of marketed vegetables has not involved fresh vegetables (we are eating today about as many pounds of fresh vegetables as people did in 1930), as much as processed vegetables, canned and frozen.

The use of frozen vegetables has increased dramatically in the last 35 years, as freezers got bigger and more popular. Consumption of these vegetables rose from 0.57 lbs/person in 1940 to 3.23 lbs/person in 1950, and has tripled since then (9.98 lbs/person).

We still eat most of our processed vegetables out of cans, however. From 12.6 lbs/person in 1920, canned vegetable use grew to 53.0 lbs/person in 1976.

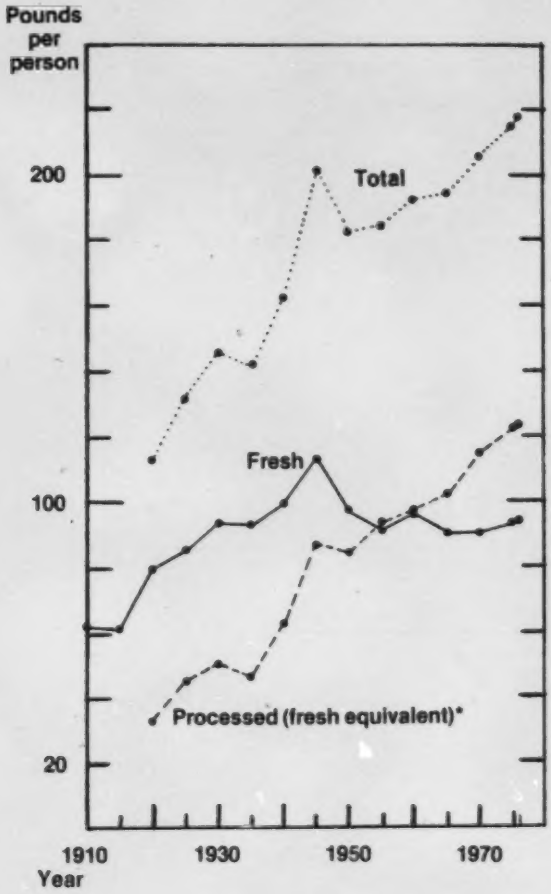
Consumption of fresh vegetables, on the other hand, has changed less. The 1976 figure (94.5 lbs/person) was way above those for the 1910-25 period (see chart), but well below the high reached in 1945 (113.5 lbs/person). (The height of the 1945 peak was unusual, though; production was high but the civilian population was reduced because many people were still serving in the military.)

Part of the reason for the shift from fresh to processed vegetables is that prices of processed fruits and vegetables increased by only 35 per cent in the 1950-66 period, while prices of fresh fruits and vegetables increased by a full 60 per cent. Of course, processed vegetables are also easier for retailers to stack and store. Processed vegetables are sometimes more convenient for the consumer, but, unfortunately they lack the full taste and texture of fresh produce.

A few other intriguing statistics:

• Among fresh vegetables, lettuce showed the greatest increase in consumption, from 6.0 lbs/person in 1920 to 21.9 lbs/person in 1976. (Note that lettuce cannot be processed.)

Fig. 26. Vegetable Consumption



*The figures describing processed vegetable consumption on the graph are "fresh equivalent" weights. They exaggerate actual intake. Under fresh equivalency, for example, the weight of discarded corn cobs are included when figuring the "fresh equivalent" weight of canned corn. But by using "fresh equivalents", we can compare the consumption of vegetables in their fresh and their processed form.

• Americans tripled their consumption of fresh carrots (from 2.2 lbs/person to 6.5 lbs/person) and of fresh corn (from 2.3 lbs/person to 7.5 lbs/person) between 1920 and 1976.

• Fresh cabbage, on the other hand, lost favor with the American consumer over the years. The 1965 consumption of 8.3 pounds of cabbage a person was only about one-third of 1920's 23.2 lbs/person level. Since 1965, cabbage has held its own: 8.2 lbs/person of fresh cabbages were consumed in 1976.

• In the canned category, snap beans, beets, pickles and tomato products have grown in popularity more than any other vegetables since 1920.

• From 0.8 lbs/person in 1920, canned snap bean consumption increased more than sevenfold to 6.0 lbs/person in 1976.

• Canned beets showed a similar increase, from 0.2 lbs/person in 1920 to 1.3 lbs/person in 1976.

• We also used a full seven times as many processed pickles in 1976 (8.4 lbs/person) as our grandparents did in 1920 (1.2 lbs/person).

• Use of canned tomato products (condiments like tomato paste, sauce, catsup, and chili sauce made up over one-half of the 1976 total) more than quadrupled between 1920 and 1976 (from 5.0 lbs/person to 22.4 lbs/person).

Even in vegetable consumption, the fast food industry has made its mark. Between 1956 and 1976, consumption of pickles (3.9 lbs/person to 8.4 lbs/person) and of tomato condiments (6.4 lbs/person to 13.3 lbs/person) more than doubled.

Chapter 3

Nutrients in Our Diet

Introduction

Having looked at the changes in the kinds of foods Americans eat, we turn to the next question: How is our diet doing nutritionally? What are the changes in the state of the American diet likely to mean for the state of American health?

As we look at the nutrients our foods provide, it is especially important to remember that the data reflect "disappearance" and not actual intake. The Department of Agriculture uses preestablished figures (from Agriculture Handbook No. 8) to determine the nutrient content of various foods. But its statistics assume that all the food that arrives at the retail level—minus bones, rinds and peelings—is actually ingested. Obviously this is far from reality. Food spoils at the store or at home, or has rotten parts which are discarded. People leave food on their plates or feed it to their pets. Moreover, nutrients are destroyed in handling and cooking. Clearly, Americans' level of nutrient intake is not as high as these "disappearance" statistics suggest.

How much less do we ingest than these figures imply? We probably swallow about 25-30 percent fewer calories than the disappearance figures indicate, according to a USDA estimate. In other words, somewhere around 70-75 percent of the calories on the market actually reach our stomachs. The 1971-74 National Center for Health Statistics' Health and Nutrition Examination Survey (HANES) puts calorie consumption at 60 percent of the food disappearance data. But researchers suspect that surveys underestimate actual food intake.

We waste more of some foods and nutrients than of others. Because the protein foods that Americans choose are relatively expensive, it is not surprising to find that the HANES puts protein intake at 78 percent of the disappearance figure while vitamin A consumption is only at 59 percent of the disappearance figure. Moreover, we may ingest even less of those nutrients that are easily lost in storage or cooking than food supply or survey data could show.

What do these nutrient consumption levels mean? Are we getting enough? To put the figures into some sort of context, we will compare estimated intakes to the Recommended Dietary Allowances (RDA) established by the National Academy of Sciences (NAS). The RDA's are

set very high, however. The NAS itself warns that "RDA should not be confused with requirements . . . RDA (except for energy) are estimated to exceed the requirements of most individuals, and thereby ensure that the needs of nearly all are met." In other words, by consuming the RDA for a nutrient, most people get more of the nutrient than they actually need. The protein RDA for adult women, for instance, is set at 46 grams per day. But the United Nations' Food and Agriculture Organization's international counterpart to the RDA, prescribes only 29 grams per day for adult women, less than two-thirds the American RDA. People consuming less than the RDA, therefore, are by no means necessarily undernourished.

Because these nutrient statistics are national averages, they may obscure nutrient deficiencies of particular segments of the population. Studies of specific groups in the population must be undertaken to discover, for example, that although average calcium intake is at an acceptable level for the entire population, it is consistently low for black women.

The national averages effectively highlight the changes in nutrient intake over time. Consumption of many vitamins and minerals has increased from the beginning of the century to the present. (If we were to include the vitamin and mineral pill supplements people take, this increase would be even more striking.)

For the most part, the reason we are ingesting more of some nutrients today is that many of the foods we eat today are enriched or fortified with extra vitamins and minerals.

Figure 41, for instance, shows that we are getting more iron from flour and cereal today than we did 50 years ago. Since we eat much less flour and cereal than our grandparents did 50 years ago, only the addition of iron to the flour and cereal we do eat can be responsible for flour and cereal furnishing more of our iron than before. (Some of the bar graphs illustrating the sources of our nutrients are drawn from 1973 instead of 1976 data. Our eating patterns change gradually, however, so the 1973 figures still adequately reflect the sources of nutrients in our current diet.)

Initially foods were fortified because an acute dietary need for the given nutrient was not being fulfilled. Around 1910, for instance, 200,000 cases of pellagra, a potentially fatal disease, were reported per year in the southern United States. Studies finally revealed that many diets in the South were severely deficient in niacin and that this deficiency was killing ten thousand Americans a year and afflicting many more with pellagra's symptoms of dermatitis, diarrhea, and depression.

Once pellagra's nutritional basis was identified, a brilliantly effective public health measure was designed to prevent the disease. The Public Health Service required that corn products—the staple of the Southern diet—be enriched with niacin. This single act saved tens of thousands of lives.

But improving the American public's health has not been the only reason for fortification. Today, cases of vitamin and mineral deficiencies are quite unusual in the United States. Yet more and more foods boast high levels of fortification. Why?

Food manufacturers have found that fortification sells products. One hundred percent of the daily RDA for 12 vitamins costs half a penny (.56 cents), according to one major producer, Hoffman-La Roche, Inc. As its sales pitch emphasizes, "food manufacturers can increase the value and appeal of their products without significantly adding to its cost." Indeed, General Mills, for example, took one of its cereals—Wheaties—and added less than a penny's worth of additional vitamins and minerals to every 12-ounce package. Now, its "enriched" product—Total—sells for about 30 cents more a package than Wheaties. Food fortification apparently enriches food manufacturers as well as their customers.

Though food fortification obviously has benefits, this approach to better nutrition has serious shortcomings. Only certain vitamins and minerals (several B-vitamins, iron, and vitamins A and C) are commonly added to foods. Though iron and the B-vitamins may be added back to make up for some of the nutrients lost when whole wheat flour is refined to white, other vitamins and minerals are permanently lost. Take magnesium, for example. About 85 percent of the magnesium in whole wheat is lost when whole wheat flour is refined into white flour. This is true of numerous other vitamins and trace minerals for which no statistics are kept: zinc, copper, folic acid, inositol, vitamin E, etc.

Indeed many useful statistics on nutrient consumption are not available.

• Although we eat more sodium than any other mineral, we have no statistics showing how much sodium Americans eat. Sodium exists naturally in most foods, but we get the majority of our sodium from sodium chloride—table salt—and other forms of sodium [sodium nitrite, sodium benzoate, monosodium glutamate (MSG), disodium phosphate, etc.] that are added to foods. Our grandparents could choose whether or not to sprinkle their food with salt, but most Americans today have no idea how much sodium they consume, because the amount of salt added to processed foods need not be listed on labels.

• We have no figures on the fiber content of the American diet. Because much attention is being focused on the possible health effects of the low level of fiber in the current American diet, it would be useful to be able to compare the amount of fiber Americans eat today with the amount our grandparents ate 60 years ago. This time, the scientists rather than the statisticians are responsible, however, because a reliable method for measuring the dietary fiber content of foods has yet to be devised.

• We also have no figures on the cholesterol content of the American diet. Since the intake of dietary cholesterol has been linked to the incidence of heart disease, it would be useful to know how Americans' cholesterol consumption has changed over the last 65 years.

In spite of the limitations of the nutrient consumption data, however, the numbers most effectively point up changes in our diet over the years. Though the absolute figures undoubtedly exaggerate actual nutrient intake, the relative changes between years are accurate measures of the changes in our diet. Fat intake in 1976 was not literally 159 grams per person, but it was about 10 percent higher than our fat intake in 1965, and 28 percent higher than in 1910. Likewise, carbohydrate intake was not exactly at 390 grams per day in 1976, but has decreased approximately 21 percent since 1910.

It is these changes that are significant. These statistics effectively document the nutritional state of the American diet—past and present. The numbers can serve as nutritional signposts to indicate the road to better nutrition and better health.

Calories

Americans decreased their caloric intake (including food but not liquor) quite steadily from the 1909-13 period when they ate about 3480 calories per person per day (cals/person/day) until the 1950's and early 1960's when consumption was below 3200 calories/person/day. In the last decade, however, we have been eating more and more calories, with our 1976 consumption level—3380 calories/person/day—only three percent below the 1909-13 level. (See figure 27.)

These disappearance data definitely exaggerate actual intake, since the 1971-74 Health and Nutrition Examination Survey (HANES) data put mean calorie intake at 1,990 cals/person/day (note that diet recall data probably underestimate actual intake).

There are several reasons for our changing caloric intake. Calories provide our bodies with the energy to do their work. More active people need more calories. At the beginning of the century Americans

were generally more active than we are today, so they needed and used more calories—more energy from their food—than we do today.

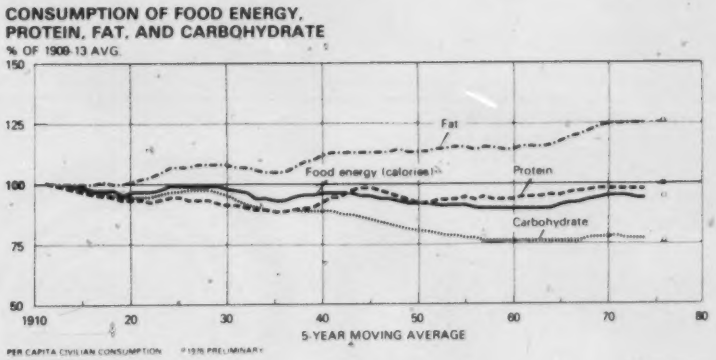
Today Americans are no more active than they were ten years ago. The American population as a whole, however, needs more calories because the average American is older. As the children of the Baby Boom grew up and began eating like hungry teenagers and young adults, total food intake on a nationwide basis had to increase. Part of the rise in calorie consumption, therefore, stems from a change in the average age and therefore in the caloric needs of the population.

The shrinking size of the average household also contributes to higher calorie consumption figures. Families are smaller today than they used to be, and more and more people are choosing to live alone. Smaller households tend to use more food per person than larger ones, probably because there is more waste.

In addition, the expansion of Federal food programs has enabled more poor people to eat more food. The Federal government spent over 7 billion dollars on its food programs in 1976, more than twice what it spent in 1972. This increase is reflected in higher calorie consumption figures.

Another reason we have been consuming more calories recently is that we are eating more dietary fat. Fat furnishes more than twice as many calories per gram as does either protein or carbohydrate, the other two major calorie-yielding nutrients in food. Between 1909-13 and 1976, the share of calories derived from fat increased from 32 percent to 42 percent, while carbohydrates' share dropped from 56 percent to 46 percent and protein's share remained at about 12 percent of total calories.

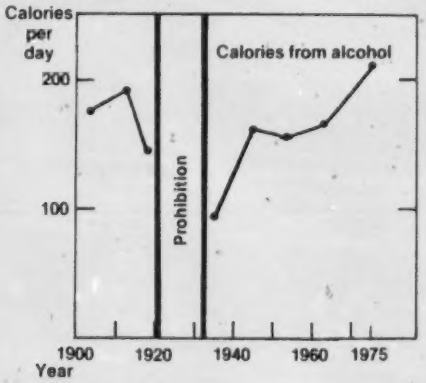
Fig. 27. Calorie, Fat, Carbohydrate, and Protein Consumption



Many Americans today appear to be eating too many calories for their own good. Since the calories that we consume but do not burn up in activity are stored as body fat, the trend toward higher calorie consumption may mean unhealthy weight gains for the average American. Indeed, HANES data indicate that the average weight of Americans in most age groups has increased substantially in the last 15 years. The average 35-44 year old, 5 foot 9 inch man weighed 6 pounds more in 1971-74 than in 1960-62. Women in the same age bracket, who were 5 foot 4 inches tall, weighed 7 pounds more than their counterparts in 1960-62. Because extra pounds can aggravate hypertension, heart disease, and possibly diabetes, the rise in caloric consumption is cause for concern. Obviously all the cyclamate, saccharin, and other miracle weight-loss aids used in the last twenty years did not result in any miracles.

One final note: USDA statistics completely ignore one significant source of calories—alcoholic beverages (see figure 28). Our liquor consumption statistics indicate that alcoholic beverages added 210 calories per day to the average adult diet in 1975. Though this is not far from the 191 calories per day that liquor provided in 1911-15, it is considerably higher than 1961-65's 164 calories a day worth of liquor. And because tens of millions of Americans drink virtually no alcoholic beverages, such drinks furnish far more than 210 calories a day to the average drinker's intake.

Fig. 28. Calories from alcohol*



*All the points on the graph represent five-year averages except 1935 and 1975.

Fat

The most alarming change in our diet is our growing fat intake. In 1976, we consumed 27 percent more dietary fat (159 grams per person per day (gms/person/day) than in 1909-13 (125 gms/person/day). A full 12 grams of the total increase came in the last ten years (1966: 147 gms/person/day). (See figure 27).

Most of our increased fat intake has come in the form of "separated" fats and oils (margarine, vegetable oil, shortening, etc.) (see figure 29). While separated fats and oils furnished 45 gms/person/day of dietary fat in 1921, we ate 70 grams from that source by 1976. Separated fats and oils account for two-thirds of the 38 gms/person/day rise in dietary fat consumption between 1921 (121 gms/person/day) and 1976 (159 gms/person/day).

Today, 83 percent of that separated fat is of vegetable origin. We use more margarine, more shortening, and more salad and cooking oils than ever before, but have cut back on butter and lard. In 1921, 70 percent of the separated fat was of animal origin.

Fig. 29. Fat Content of Separated Fats and Oils

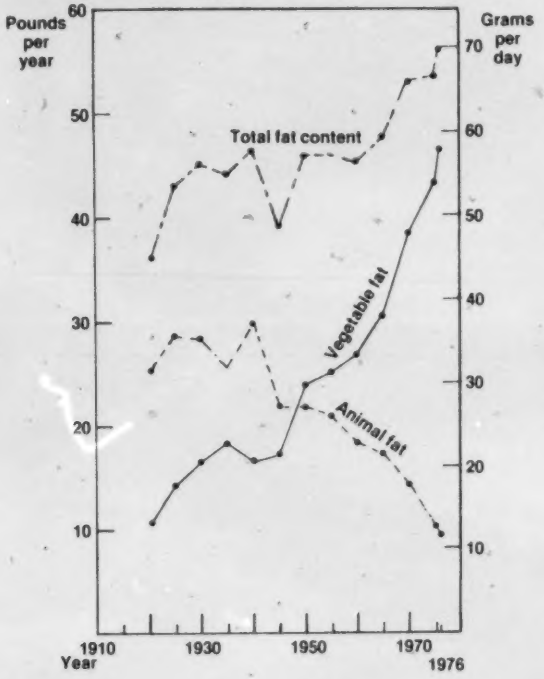
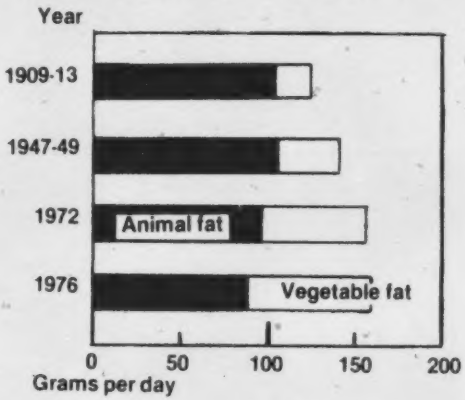


Figure 30 shows the changing sources of our *total* dietary fat intake. Overall, we seem to be growing fonder and fonder of vegetable fat while we cut down slightly on our intake of animal fat. Whereas only 16 percent of Americans' dietary fat came from vegetable sources in 1909-13, about 43 percent was of vegetable origin in 1976.

Most of the animal fat in our diet comes from the red meat we eat so voraciously. Meats alone provided 48 grams of dietary fat in 1976 —a full 30 percent of our total daily fat intake.

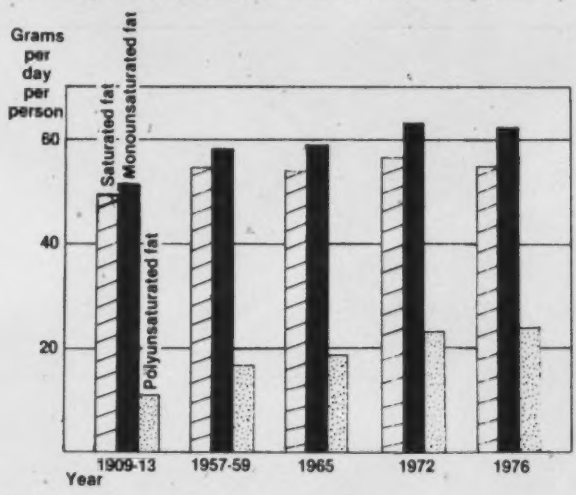
Because animal fats are generally high in saturated fat and low in polyunsaturated fat, the trend toward more vegetable and less animal fat suggests that we ingest less saturated fat than did our grandparents. In fact, our increased meat consumption partially makes up for the decreasing use of lard and butter. If we chose chicken, turkey or fish instead of red meat, our saturated fat intake would decrease. Liquid vegetable oils are generally high in polyunsaturated fat (except for palm and coconut oils which are high in saturated fat and peanut and olive oils which are high in monounsaturated fat). But more and more vegetable oils are "hydrogenated," or hardened, by a process which converts polyunsaturated fat into monounsaturated and saturated fat, for use in shortening, margarines, and many processed foods. As a result, consumption of all three kinds of dietary fat—saturated, monounsaturated and polyunsaturated—has been higher than ever in the past decade (see figure 31). Polyunsaturated fat intake seems to be rising steadily, but we did eat slightly less saturated and monounsaturated fat in 1976 than in 1972.

Fig. 30. Fat Content of Total Fat Consumption



In its report, *"Dietary Goals for the United States,"* the Senate Select Committee on Nutrition and Human Needs urged a *reduction* of fat intake to 30 percent of calories from the 42 percent supplied in 1976. Many researchers, health organizations, and foreign governments have also pressed for sharp reductions in fat consumption, noting the link between high fat intake and cardiovascular diseases and possibly certain cancers.

Fig. 31. Fatty Acid Content of Total Fat Consumption



According to the *"Dietary Goals,"* saturated fat, which *raises* blood cholesterol levels, should provide ten percent of our calories rather than the 16 percent it now supplies. Monounsaturated fat, which has no effect on blood cholesterol levels, should be cut back from its current level of 19 percent of calories to 10 percent. On the other hand, polyunsaturated fat, which *lowers* the blood cholesterol level, should supply another ten percent of our fat calories (instead of its current seven percent contribution). The increase in polyunsaturated fat would lower blood cholesterol levels thereby reducing the risk of heart disease. But recent cancer research suggests that we should eat less total fat. This research has linked diets rich in total fat with a higher risk of colon (bowel) and breast cancer, two leading cancer killers.

In its recommendation that "30 percent of calories [come] from fat" the Senate Committee added that "there is increasing scientific research to suggest some day a dietary fat intake of 20 percent to 25 percent might be recommended; and even less for those people who already have heart disease." The Japanese, who have relatively low rates of heart disease and colon and breast cancer, have fared well on a diet that was only ten percent fat, though in recent years the Japanese have begun increasing their consumption of fat. Therefore, the general conclusion on fat—any kind of fat—is "the less the better."

Carbohydrates

One of the most striking changes in our diet has been the dramatic decline in our carbohydrate intake. While Americans ate 492 grams per person per day (gms/person/day) in 1909-13, average carbohydrate consumption dropped to 374 gms/person/day by the 1960's. In the last ten years, greater use of sugar and other sweeteners has reversed this decline. 1976 carbohydrate consumption, in fact, was up to 390 gms/person/day, the highest it has been in the last 25 years but still 21 percent below the 1909-13 level. (See figure 27.)

At least 70 percent of our carbohydrates have always come from two major sources: flour and cereal products; and refined sugars and sweeteners. But the share of carbohydrates contributed by each of the two categories has changed dramatically. Whereas in 1909-13, 56 percent of Americans' carbohydrate came from flour and cereals (276 gms/person/day) and only 22 percent from sugars and sweeteners (106 gms/person/day), in 1976 we got less of our carbohydrate from flour and cereal products (35 percent: 138 gms/person/day) than from refined sugars and sweeteners (37 percent: 145 gms/person/day).

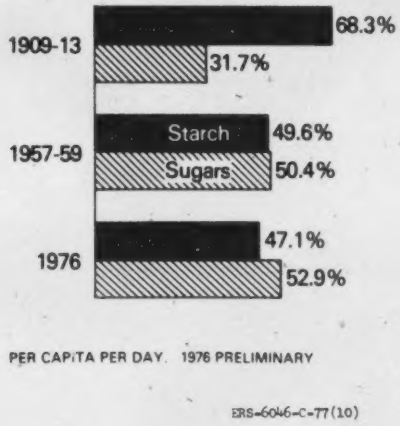
Foods furnish two basic kinds of carbohydrates: sugars or simple carbohydrates; and starch or complex carbohydrates. As we have eaten fewer grains and cereals and more sweeteners, we have consumed more sugars and fewer starches. Of the 492 gms/person/day of carbohydrates that Americans consumed in 1909-13, about 335 grams were starches and 157 grams were sugars. In 1976, on the other hand, Americans consumed 390 grams of carbohydrate in all—about 181 grams as starch, but 208 grams as sugars. (See figure 32.) These sugar figures include sugars that occur naturally in food (fruit, milk, etc.), as well as refined sugars.

The emphasis on sugars instead of complex carbohydrates is unfortunate. Sources of starch—foods like breads, cereals, wholegrains, and potatoes—are important sources of vitamins, minerals, and protein while most sugars contain no nutrients other than calories (two-

thirds of our sugars are nutrient-empty refined sweeteners—see figure 33). More importantly, whole grains and whole grain breads and cereals are good sources of dietary fiber—that part of complex carbohydrates, such as cellulose and lignin, not digested by the body. Dietary fiber is essential to proper digestive function and may even reduce the risk of colon (bowel) cancer.

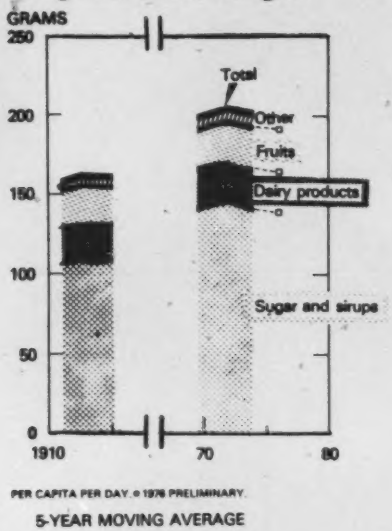
To sum up, our carbohydrate intake has changed in two important ways over the last 65 years. In the first place, overall carbohydrate consumption has decreased substantially (21 percent). Secondly the nutritional quality of our diet has suffered from the switch from starch toward sugar.

Fig. 32. Sources of Carbohydrates



Because the changes in our carbohydrate intake may lead to serious health problems, the Senate Select Committee on Nutrition and Human Needs has recommended that Americans reduce their consumption of refined sugars from the current 18 percent level to 10 percent of calories. Intake of complex carbohydrates and "naturally occurring sugars" should increase from the 28 percent of calories they now supply (22 percent complex carbohydrates and 6 percent "naturally occurring sugars") to a total of 48 percent of our calories. Overall, therefore, carbohydrates would provide 58 percent of our calories, 12 percent more than the 46 percent they now supply. Starches and "naturally occurring sugars" would replace some of the fats and refined sweeteners, which together account for 60 percent of our calories today.

Fig. 33. Sources of Sugars



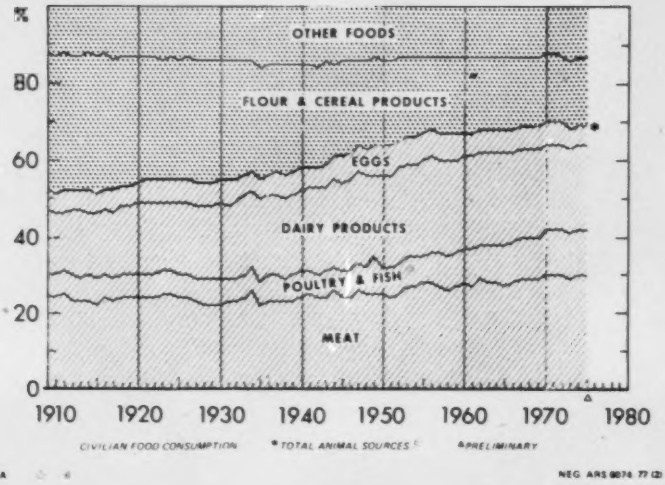
Protein

Protein consumption has varied little over the last 65 years, fluctuating between 88 and 104 grams per person per day (gms/person/day). Although 1976 consumption (103 gms/person/day) was the highest in 30 years, it is close to the 1909-13 level (102 gms/person/day). (See figure 27.)

Americans get plenty of protein. The 1976 disappearance figure is about twice the National Academy of Sciences' generous Recommended Dietary Allowance (56 gms/day for adult men and 46 gms/day for adult women) and close to three times the amount recommended by the United Nations Food and Agriculture Organization. And although disappearance data exaggerates protein intake somewhat, even the Health and Nutrition Examination Survey (HANES) data indicate that in the 1971-74 period, the average American got 78 grams of protein a day from food—78 percent of the disappearance figure for that period. There is some medical evidence that diets excessively high in protein may be harmful, but further research is needed.

Americans consume so much protein because they eat so much meat. The level of protein intake in America, in fact, seems to reflect the level of meat consumption. Protein intake was high (above 96

Fig. 34. Sources of Protein



gms/person/day) in 1910-20, the middle 1940's, and from the middle 1960's onward, periods in which Americans were eating a lot of meat. The lowest protein intake, on the other hand, came during the 1930's, when Americans ate relatively little meat.

Indeed, meat, fish and poultry, which provided 30 percent of our protein in 1909-13, now furnish 42 percent of our daily protein. Dairy product consumption has also risen, to furnish 22 rather than 16 percent of our protein intake. Because we eat so much less bread and grains than in 1909-13, flour and cereal products, which used to furnish 36 percent of our protein, now make up only 17 percent of our daily intake. (See figure 34.)

Obviously, modern Americans rely on animal products for more of their protein than their grandparents did. We now obtain more than two-thirds of our protein from animal products. Our grandparents derived only about one-half of their protein from animal sources, the other half coming from vegetable sources.

Though still a minor source of protein at present, the use of soy products increased to just over one percent of total protein intake in 1976. Because imitation meat made from soybeans is a low-cost and low-fat alternative to red meat, we may see more and more of it in the future.

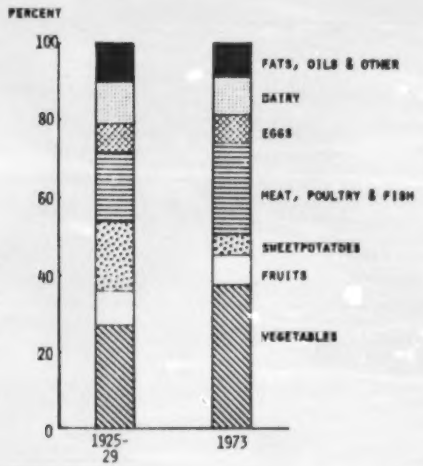
Vitamin A

Vitamin A consumption has stayed fairly constant over the last 65 years. Our 1976 intake 8,100 International Units per person per day (IU/person/day), was only 7 percent above the 1909-13 level (7,600 IU/person/day). Only in the 1940's was vitamin A consumption significantly higher (it peaked at 10,000 IU/person/day in 1945).

Vitamin A helps keep our eyes, skin, teeth and gums healthy and helps protect us from infection. Eating too little vitamin A can lead to night blindness—reduced ability to see in the dark.

The Health and Nutrition Examination Survey (HANES) data (which put vitamin A intake at 5,200 IU/day for adult women and at 4,000 IU/ day for adult men) indicate that, on the average, Americans get the Recommended Dietary Allowances of 5,000 IU/person/day for adult men and 4,000 IU/person/day for adult women.

Fig. 35. Sources of Vitamin A



Vegetables provided 36 percent of our vitamin A in 1976, while meat, fish and poultry supplied another 23 percent. The bar graph highlights the enormous vitamin A content of sweet potatoes. A mere 18.6 pounds per person per year in 1925-29 furnished nearly 20 percent of our vitamin A. The drop to 4.6 pounds of sweet potatoes in 1973 produced a marked decrease in sweet potatoes' share of total vitamin A intake. (See figure 35.)

Fortification has increased the vitamin A content of the American diet. Vitamin A added to margarine accounted for six percent of the vitamin A in the food supply in 1973. That added to milk accounted for another three percent, while fortification of miscellaneous foods accounted for three percent more.

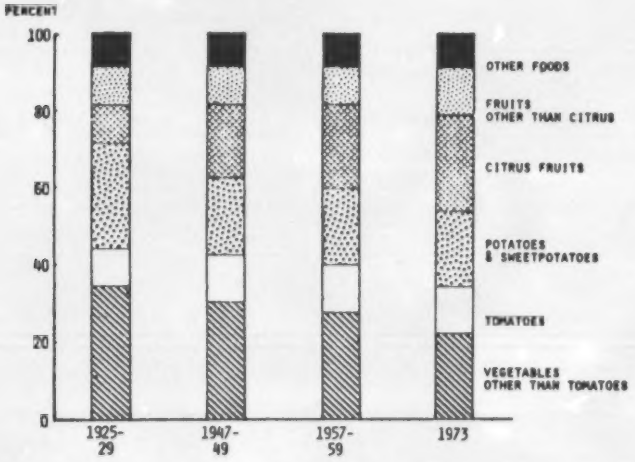
Vitamin C (ascorbic acid)

In 1976, we consumed more vitamin C [123 milligrams per person per day (mgs/person/day)] than we had in thirty years, 18 percent more than in 1909-13 (104 mgs/person/day).

Though these are disappearance data, Americans appear to be getting substantially more than the 45 mgs/person/day Recommended Dietary Allowance for adults. The 1971-74 Health and Nutrition Examination Survey (HANES) data, in fact, indicate that average vitamin C intake was a generous 86 mgs/person/day.

Without question, Americans get enough vitamin C to prevent scurvy—the severe form of vitamin C deficiency that used to kill sailors who travelled for months without eating fresh fruits or vegetables. Dr. Linus Pauling and a number of other scientists have argued, on the basis of a modest amount of evidence, that very large amounts of vitamin C reduce the incidence and severity of the common cold and inhibit the growth of certain cancers.

Fig. 36. Sources of Vitamin C (Ascorbic Acid)



Citrus fruits, renowned for their vitamin C content, provided only 28 percent of our vitamin C in 1976. Since 1910, in fact, vegetables and potatoes have furnished a larger proportion of our vitamin C than all fruits.

Our grandparents got their vitamin C from quite different sources than we do today. In 1909-13, 42 percent of Americans' vitamin C came from vegetables, 36 percent from potatoes and sweet potatoes, and less than 6 percent from citrus fruit (none were processed then). In 1976, on the other hand, we got five times that much of our vitamin C from citrus fruit (28 percent), half as much from potatoes and sweet potatoes (18 percent), and 35 percent from vegetables. (See figure 36.)

Again, fortification is one reason that Americans today consume more vitamin C than their grandparents did. In 1973, 8 percent of the total vitamin C supply was added to foods, with roughly half added to fruit juices and drinks. Vitamin C is even added—more as an advertising gimmick than as a health measure—to some breakfast cereals which normally contain none of this vitamin. In addition to food sources of vitamin C, many people obtain vitamin C—and other vitamins—from vitamin pills.

Vitamin B-6 (pyridoxine)

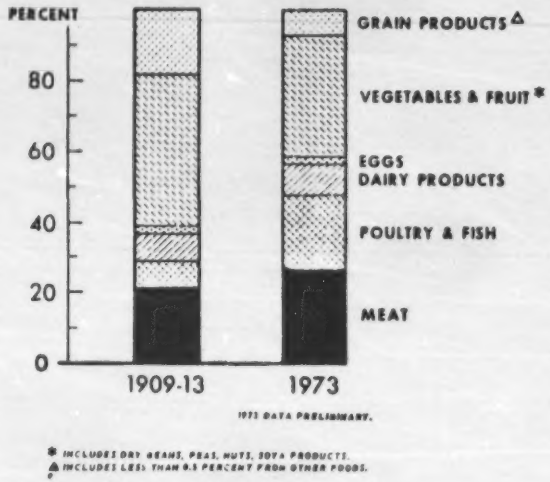
In 1976, we ate as much vitamin B-6 as our grandparents did in 1909 [2.31 milligrams per person per day (mgs/person/day)], and considerably more than the 1.94 mgs/person/day Americans ate in 1935. These disappearance figures compare to the Recommended Dietary Allowance of 2.0 mgs/person/day for adults.

Vitamin B-6 is crucial to protein metabolism. People who eat large quantities of protein, in fact, need more vitamin B-6 than the average. Women who use oral contraceptives may also have an increased need for the vitamin. As with the other B-vitamins, a deficiency shows up in skin and nervous system disturbances, as well as anemia and other blood cell disorders.

Meat, fish, and poultry, which contributed only 29 percent of our vitamin B-6 in 1909-13, furnished 45 percent of our vitamin B-6 in 1976. On the other hand, 17 percent of our vitamin B-6 came from flour and cereals in 1909-13; now we get a mere nine percent from those sources. Likewise, potatoes and sweet potatoes, which supplied 23 percent of our vitamin B-6 in 1909-13, now furnish only 12 percent. (See figure 37.)

In recent years, vitamin B-6 has been added to foods like breakfast cereals, infant formulas, and meal replacements so consumption has been maintained at a high level. But the amounts lost when whole-grains are refined into white flour are not added back to white flour when it is enriched.

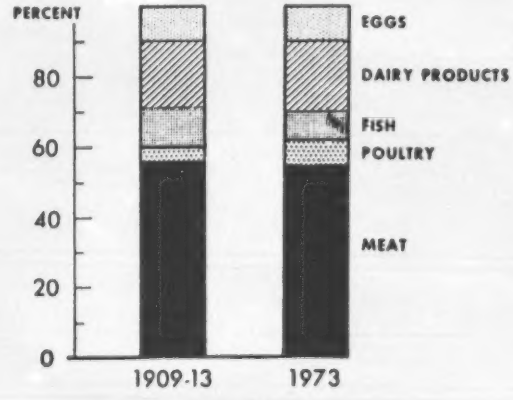
Fig. 37. Sources of Vitamin B-6



Vitamin B-12

In 1976, Americans ate 14 percent more vitamin B-12 [9.6 micrograms per person per day (mcg/person/day)] than in 1909-13 (8.4 mcg/person/day). Vitamin B-12 consumption dipped to 7.2 mcg/person/day in 1935, when meat consumption was relatively low, and then rose fairly steadily as Americans began to eat more and more meat.

Fig. 38. Sources of Vitamin B-12



Humans need vitamin B-12 to ensure normal growth and blood formation. Vitamin B-12 helps us metabolize the fats, carbohydrates and proteins that make up the foods we eat. Average consumption levels are well above the Recommended Dietary Allowance of 3.0 mcg/person/day. In fact, dietary vitamin B-12 deficiency is very rare, even among strict vegetarians who eat no animal products for a long period of time. Vitamin B-12 deficiency is dangerous, however, because it can lead to irreversible damage to the nervous system.

Most (70 percent) of our vitamin B-12 came from meat, fish, and poultry in both 1909-13 and in 1976. Red meat alone furnished at least 50 percent of our vitamin B-12 throughout the years. Edible offals (liver, tripe, tongue, and brains) are particularly rich in the vitamin. Though we eat only about ten pounds of them per person per year, edible offals nevertheless furnish about one-third of our vitamin B-12. (See figure 38.)

Animal products are the only natural sources of vitamin B-12. Because some breakfast cereals have recently been fortified with B-12, 1.5 percent of our vitamin B-12 came from the flour and cereals category in 1976.

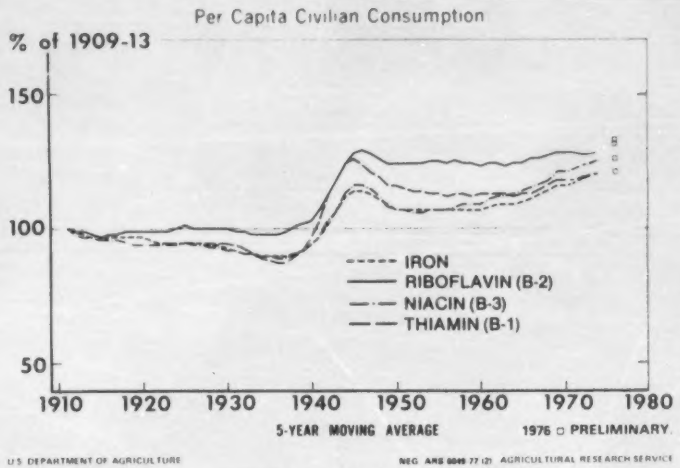
Vitamin B-1 (thiamin), Vitamin B-2 (riboflavin), Vitamin B-3 (niacin), Iron

Thiamin, riboflavin, niacin, and iron consumption levels have followed similar patterns. After a trend of decreasing consumption, bread and flour were enriched with these nutrients in the 1940's. Since then, intake levels have risen dramatically. Furthermore, since standards for enrichment of white flour with the three vitamins were raised in 1975, small jumps in consumption are also noticeable in the 1976 estimates. (See figure 39.)

Thiamin consumption rose by 26 percent between 1909-13 (1.64 mgs/person/day) and 1976 (2.06 mgs/person/day.) Pork is particularly rich in thiamin. About 30 percent of the thiamin we consumed in 1970 was the result of fortification.

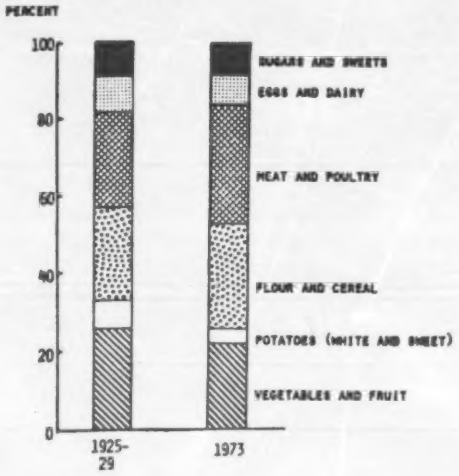
Americans in 1976 ate 33 percent more riboflavin [2.47 milligrams per person per day (mgs/person/day)] than in 1909-13 (1.86 mgs/person/day). The RDA for riboflavin is set at 1.6 mgs/day for adult men and 1.2 mgs/day for adult women. Riboflavin intake has risen in recent years as dairy products have become more popular. These foods are the biggest supplier of riboflavin in our diet, furnishing 39 percent of the 1976 total. Fortification accounted for about another 15 percent of our riboflavin in 1970.

Fig. 39. Vitamin B-1, Vitamin B-2, Vitamin B-3 and Iron Consumption



We ate 31 percent more niacin in 1976 (25.3 mgs/person/day) than in 1909-13 (19.3 mgs/person/day). Severe niacin deficiency causes a disease called pellagra, which was widespread in the southern United States before corn meal was fortified with niacin. We now consume more than the RDA of 18 mgs/person/day for adult males and 13 mgs/person/day for adult females. USDA estimates that fortification accounted for about 15 percent of the niacin in 1970 food supply.

Fig. 40. Sources of Iron



In general, each of the B-vitamins is involved in a number of biological reactions. When the body's supplies drop, the deficiency usually becomes evident in the form of skin and nervous system disorders and sometimes as poor growth and gastrointestinal disturbances.

Iron consumption has risen 22 percent between 1909-13 (15.2 mgs/person/day) and 1976 (18.6 mgs/woman/day). Fortification accounted for 20 percent of our iron in 1970. Many Americans—particularly women who need more iron than men—do not get the RDA for iron. According to the Health and Nutrition Examination Survey (HANES) data, mean iron intake was 11.95 mgs/person/day in 1971-74, 34 percent below the RDA of 18 mgs/day for adult women (RDA for adult males: 10 mgs/day). Whether this apparent deficiency is reflected in poor health is open to question. Iron is part of hemoglobin, a protein molecule that enables red blood cells to carry oxygen from the lungs to all parts of the body. Iron is also a component of myoglobin, which performs a similar oxygen-storage function in muscle. Iron deficiency leads to anemia, because the blood's ability to carry oxygen throughout the body is severely reduced.

The increases in our B-vitamin and iron consumption reflect both our increased meat consumption and the fortification of flour and cereal products. The meat, poultry, and fish category provided 25 percent of our thiamin, 24 percent of our riboflavin, 45 percent of our niacin, and 31 percent of our iron in 1976. Flour and cereal products furnished another 41 percent of our thiamin, 21 percent of our riboflavin and 27 percent of our niacin and iron in that year. (For iron, see figure 40.)

Magnesium

Americans today eat substantially less magnesium than their grandparents did. The magnesium content of the American diet dropped steadily from 408 milligrams per person per day (mgs/person/day) in 1909-13 to 346 mgs/person/day in 1954 and has since stayed steady at about that level (1976: 344 mgs/person/day).

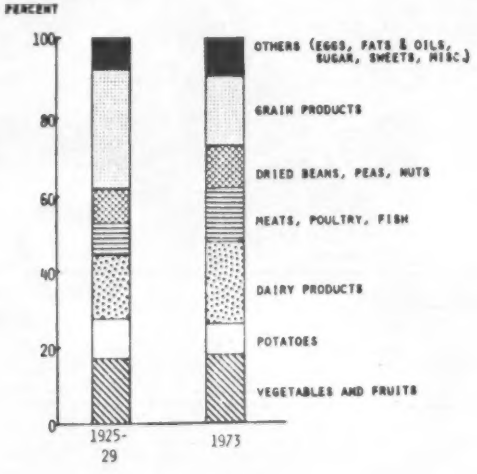
These disappearance figures compare to Recommended Dietary Allowances of 300 mgs/day for adult women and 350 mgs/day for adult men. Magnesium must be present for many biological reactions to take place, particularly those involved in nerve and muscle function. It is also a vital constituent of bone and soft tissue. Individuals who drink excessive amounts of alcohol may deplete their bodies' magnesium supply.

Our magnesium intake has dropped mainly because we eat less bread and cereal. Whereas flour and cereal products furnished our

grandparents with 154 mgs/person/day of magnesium in 1909-13 (38 percent of the total), only 61 mgs/person/day came from that source in 1976 (18 percent of the total). In 1976, dairy products were our biggest magnesium supplier (22 percent). Dried beans, peas, nuts and especially soybeans are excellent sources of magnesium (they provided 12 percent of 1976 total magnesium consumption). (See figure 41.) A shift toward vegetable proteins, therefore, might increase our magnesium intake. We could also increase our magnesium intake by eating more wholegrains: whole wheat flour, for instance, has more than four times as much magnesium as all purpose "enriched" white flour. Indeed, the recent growth in popularity of non-white "variety" breads (whole wheat, cracked wheat, etc.) may spur a rise in Americans' magnesium levels.

Because magnesium is not normally added to fortified, processed foods, its level in our diet may serve as a better measure of the quality of the modern American diet than the level of certain vitamins. The addition of "popular" vitamins and minerals to breakfast cereals and other fortified foods masks the declining intake of innumerable less "popular" nutrients, which manufacturers do not add to foods.

Fig. 41. Sources of Magnesium



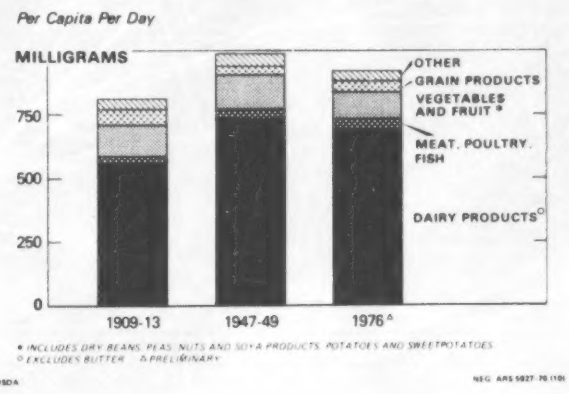
Calcium

In 1976, Americans ate 13 percent more calcium [930 milligrams per person per day (mgs/person/day)] than in the 1909-13 period (820 mgs/person/day), but 15 percent less than in 1946 (1,009 mgs/person/day) when milk consumption was particularly high.

Though these calcium consumption figures are disappearance data, even the Health and Nutrition Examination Survey data (867 mgs/person/day in 1971-74) indicate that calcium consumption exceeds the adult Recommended Dietary Allowances of 800 mgs/person/day. Children and pregnant women need more calcium than other population groups to ensure proper bone and tooth formation. Moreover, individuals who consume large amounts of protein may need additional calcium.

Dairy products, always our chief source of calcium, furnished 75 percent of our total intake in 1976, up from their 68 percent share in 1909-13. Whereas whole fluid milk provided half of our total calcium in 1909-13, in 1976 whole milk contributed only about one-third of our calcium, while low-fat milks and cheeses supplied another third. (See figure 42.)

Fig. 42. Sources of Calcium



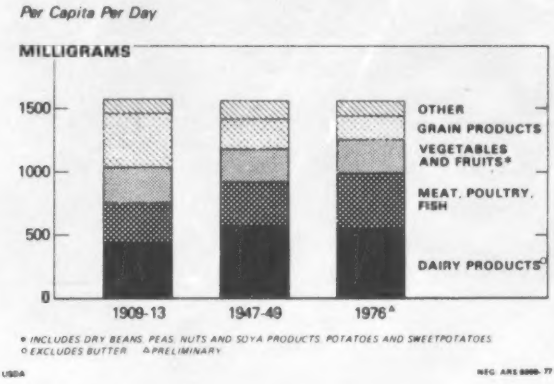
Phosphorus

The phosphorus level of the food supply has varied little over the last 65 years. In 1976, Americans ate virtually the same amount of phosphorus [1.55 grams per person per day (gms/person/day)] as their grandparents did in 1909-13 (1.56 gms/person/day).

Phosphorus is essential to bones and teeth. Moreover, several B-vitamins need to combine with phosphorus to play their role in biological reactions. Because phosphorus is found in such a wide variety of foods, dietary deficiency is not a problem—except among people who take a lot of antacids (antacids interfere with phosphorus absorption). Indeed, we seem to well exceed the adult Recommended Dietary Allowance of 800 mgs/person/day.

Our phosphorus comes from somewhat different sources than it used to. Whereas in 1909-13, animal products and vegetable products each provided about half the phosphorus in our diet, by 1976, over two-thirds of our phosphorus was of animal origin. The additional phosphorus from our increased use of meats and dairy products has replaced the phosphorus that grains used to furnish our grandparents. (See figure 43.)

Fig. 43. Sources of Phosphorus



USDA's food supply data do not include the phosphorus added to processed foods—the phosphoric acids that acidify and flavor cola and root beer drinks; the phosphates that leaven bread, prevent discoloration, bind water, etc. No one seems to know how much added phosphorus we eat. A 1972 National Academy of Sciences survey suggested that Americans eat 1.8 gms/person/day of added phosphorus. But according to Stauffer Chemical, a major phosphate producer, the industry's own survey put added phosphorus intake at about 0.4 gms/person/day. In any case, the contribution made by added phosphorus is quite significant and is likely to become more significant as Americans eat more and more processed foods.

Why the concern over our phosphorus intake? Excessive consumption of phosphorus may cause health problems. Some scientists think that the ratio between phosphorus and calcium in the American diet is too large. Eating too much phosphorus or too little calcium raises the phosphorus-calcium ratio and may make bones brittle, especially in older women. According to the food supply data, the phosphorus-calcium ratio in our diet has declined from 1.9:1 in 1909-13 to 1.7:1 in 1976. Though this trend seems reassuring, it may not represent the actual change in people's intakes, because those figures exclude untold amounts of added phosphorus.

Appendices

I. Approximate Daily Food Consumption

	1910	1950	1976
Total, all foods	4.4 lbs.	4.1 lbs.	4.0 lbs.
Beef	2.4 oz.	2.2 oz.	4.2 oz.
Butter	4.8 tsp.	2.8 tsp.	1.2 tsp.
Cheese, hard and cottage	0.2 oz.	0.5 oz.	0.9 oz.
Chicken	0.6 oz.	0.9 oz.	1.9 oz.
Coffee, 6-ounce cups	1.3 c.	2.2 c.	1.9 c.
Corn Syrup	1.0 tsp.	1.7 tsp.	6.0 tsp.
Cream	.8 tsp.	1.0 tsp.	.5 tsp.
Fish	.5 oz.	.5 oz.	.6 oz.
Flour, wheat	9.4 oz.	5.9 oz.	4.9 oz.
Flour and Other Cereal Products	12.9 oz.	7.3 oz.	6.3 oz.
Fruit, fresh	5.4 oz.	4.7 oz.	3.6 oz.
Fruit, fresh and processed*	6.3 oz.	8.2 oz.	9.5 oz.
Frozen Dairy Products	.3 Tbs.	3.0 Tbs.	4.4 Tbs.
Margarine	0.4 tsp.	1.6 tsp.	3.3 tsp.
Meat, red fresh	6.0 oz.	5.9 oz.	7.3 oz.
Milk, low-fat	0.3 c.	0.2 c.	0.5 c.
Milk, fresh whole	1.3 c.	1.5 c.	.9 c.
Potatoes, fresh	8.7 oz.	4.2 oz.	2.2 oz.
Potatoes*, total	8.7 oz.	4.6 oz.	5.1 oz.
Poultry	0.8 oz.	1.1 oz.	2.3 oz.
Soft Drinks	0.4 oz. (1909)	3.5 oz.	10.8 oz.
Sugar, refined cane and beet	3.3 oz.	4.4 oz.	4.2 oz.
Sweeteners, total caloric	3.9 oz.	5.2 oz.	5.9 oz.
Tea, 6-ounce cups	.5 c.	.3 c.	.4 c.
Vegetables, fresh	3.5 oz. (1920)	4.3 oz.	4.6 oz.
Vegetables, fresh and processed*	4.9 oz. (1920)	7.9 oz.	9.5 oz.
Calories	3490	3260	3380
Protein	102 gms.	95 gms.	103 gms.
Fat	124 gms.	145 gms.	159 gms.
Carbohydrate	495 gms.	402 gms.	390 gms.

*Fresh equivalents of processed weights are used, i.e. the weight of frozen or dehydrated produce is converted to the weight of its fresh equivalent.

II. Fast Food Facts and Figures

The advent of fast food restaurants has had a great impact on the American diet. For instance, McDonald's' (the largest fast food chain) sales increased almost thirty-fold from $129,600,000 in 1964 to $3,738,000,000 in 1977. The effect on our diets of the proliferation of fast food restaurants is reflected in the following statistics:

- Ice milk consumption grew *from* 1.2 pounds per person in 1950, *to* 4.5 pounds per person in 1960, *to* 7.4 pounds per person in 1976.

Ice milk, in soft form, is used in cones and shakes at fast food shops.

- Frozen potato use climbed *from* 6.6 pounds per person in 1960, *to* 36.8 pounds per person in 1976.

Our use of frozen potatoes is keeping the total potato figure from plummeting. Seven-eighths of all frozen potatoes were sold as French fries in 1976—three-quarters of them to restaurants and institutional kitchens.

- Fresh and frozen fish consumption was up *from* 3.8 pounds per person in 1960, *to* 5.5 pounds per person in 1976.

- Chicken consumption rose *from* 27.8 pounds per person in 1960, *to* 43.3 pounds per person in 1976.

Kentucky Fried Chicken outlets serve 2.3 billion pieces of chicken per year—enough to serve 10 pieces to each and every American!

- Beef consumption went *from* 64.3 pounds per person in 1960, *to* 95.4 pounds per person in 1976.

McDonald's alone sells a billion hamburgers every 5 months. That equals 6.6 million per day or 11 hamburgers per person per year.

- Hard cheese consumption rose *from* 8.3 pounds per person in 1960, *to* 15.9 pounds per person in 1976.

The 92 percent increase in hard cheese consumption was spurred by our increasing use of mozzarella—"the pizza cheese."

- And we are not eating our hamburgers and French fries plain—chili sauce, and tomato catsup, paste and sauce consumption jumped *from* 7.6 pounds per person in 1960, *to* 13.3 pounds per person in 1976. Meanwhile, pickle consumption grew *from* 4.5 pounds per person in 1960, *to* 8.4 pounds per person in 1976.

- And don't forget the drinks which wash our food down—soda pop consumption rose *from* 192 8-ounce servings per year in 1960, *to* 493 8-ounce servings per person in 1976.

III. The Changing American Diet Quiz

1. Of the total vitamin C in our diet in 1976, how much came from citrus fruit (processed and fresh: includes orange juice, etc.)?
   a) 28 percent b) 48 percent c) 68 percent
2. How many eight-ounce servings of soft drinks did the average American drink in 1976?
   a) 86 b) 367 c) 493
3. In the average American's diet, how many calories a day come from alcoholic beverages?
   a) 90 b) 210 c) 350
4. Was coffee consumption in 1976 higher or lower than in 1946? By how much?
   a) 62 percent higher b) 36 percent lower c) 134 percent higher
5. On the average, how many four-ounce glasses of frozen orange juice did Americans drink in 1976?
   a) 110 b) 240 c) 365
6. Of all the fresh fruit that we bought in 1976, what proportion was bananas?
   a) 18 percent b) 36 percent c) 52 percent
7. How much cheese (including cottage cheese) did Americans eat (on the average) in 1976?
   a) 20.7 pounds b) 35.3 pounds 55.5 pounds
8. How much red meat (beef, lamb, pork and veal) did Americans consume on the average in 1976?
   a) 85.2 pounds b) 165.2 pounds c) 242.5 pounds
9. How much of the ice cream and ice milk we ate in 1976 was vanilla?
   a) 72 percent b) 42 percent c) 24 percent
10. What percentage of our daily calorie intake was supplied by added sweeteners (sugar, corn syrup, etc.) in 1976?
    a) 3 percent b) 10 percent c) 18 percent
11. Is the magnesium content of the 1976 American diet higher or lower than in 1910?
    a) 60 percent higher b) 32 percent higher c) 16 percent lower
12. Did Americans in 1976 get more or fewer of their calories from fat than Americans in 1910?
    a) less than 5 percent more or less b) 17 percent more c) 31 percent more

Answers

1—a, 2—c, 3—b, 4—b, 5—a, 6—b, 7—a, 8—b, 9—b, 10—c, 11—c, 12—c

About CSPI

Center for Science in the Public Interest is a nonprofit, tax-exempt organization that seeks to provide the public with reliable, interesting, understandable information about food, the food industry, and the government regulation of food. It is funded through the sale of its reports, private donations, and foundation grants, and accepts no corporate money. Its goal is to improve the health of the American public through research and public education. Among its many activities, CSPI originated and sponsored for three years National Food Day.

CSPI tackles food-related problems at the national and local levels. Nationally, CSPI watchdogs federal agencies that oversee food safety, trade, and nutrition. We have initiated legal actions to ban unsafe and poorly tested food additives and have petitioned federal agencies for better food labeling and action against deceptive food advertising. The project director has testified at Congressional hearings on nutrition research, food additives, and school lunches.

Staff nutritionists investigate and evaluate the quality of the American diet, paying particular attention to the fat, sugar, and salt content. Typically, our staff will follow up the investigations by publicizing the problems and initiating legal actions designed to improve governmental and corporate policies.

Others on the staff are looking into the forces that shape federal health and nutrition policies. We are examining both government agencies and voluntary agencies. Again, after the fact-finding portion of the project is completed, our investigators organize, talk to, and lobby the appropriate parties in order to generate a better climate for preventing disease.

CSPI catalyzes action at the local level by working with citizen groups around the country. The project also publishes how-to manuals on improving school lunches, vended foods, and community food policies.

Send to CSPI, 1755 S Street, NW, Washington, D.C., 20009, for a free list of our publications and membership information.

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The Changing American Diet

Authorities have called the American diet "pathogenic." The foods we eat contribute to the current epidemics of tooth decay, obesity, heart disease, stroke, diabetes, and cancer. Increasing medical evidence links Americans' high fat diet to heart disease, stroke, and certain forms of cancer. Our growing consumption of sugars causes tooth decay, which costs Americans three billion dollars a year in dental bills alone.

Government agencies and health organizations are urging Americans to improve their health by changing their diets. Here, at last, is a clearly written account of what we are eating now and what Americans ate in the early 1900's, putting dietary changes in perspective.

Did You Know That if You Are An Average American You . . .

- guzzled 493 8-ounce servings of soft drinks in 1976, 300 more than in 1960?
- ate less than a third as many fresh potatoes or apples in 1976, as your grandparents ate in 1910?
- drank 210 calories worth of alcoholic beverages per day in 1976?
- started cutting back on your coffee drinking years ago? Americans in 1976 drank 56 percent as much coffee (560 cups per person) as their counterparts in 1946 (1,005 cups).
- got 28 percent of your vitamin C from citrus fruits in 1976?

The Changing American Diet is published by the Center for Science in the Public Interest (CSPI), a non-profit group dedicated to helping solve some of our nation's serious nutrition problems. Letitia Brewster is a research associate at CSPI, and Michael F. Jacobson is CSPI's executive director and author of numerous books, pamphlets, and articles on nutrition and food additives.

If you want to learn how dramatically food habits have changed in the U.S. this century, get your hands on . . . The Changing American Diet . . .

Lloyd Shearer
Parade Magazine

. . . The Changing American Diet *fills a gap that people working with food and nutrition have felt for years. The growing numbers of Americans concerned with the past and present state of the national diet should find this fascinating resource exceptionally useful.*

George McGovern
Chairman
Subcommittee on Nutrition
United States Senate

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